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## Serving Model Aviation 16 Years

VOL. XXXI, No. 5

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A FEW days ago a young modeler appeared in our office and as we discussed the pros and cons of the magazine, model building, the future, etc. the conversation turned to the various contributors to Model. Alrelane News and the knowledge required to design and build an original design. This young modeler obviously wanted to explain several ideas he had concerning a new project, but for some strange reason he could not seem to get up enough nerve to tell me about them. Sensing his false reticence I asked him pointblank: "Why don't you come right out and tell me about your new job?"

Well, he was thunderstruck and lapsed into a string of excuses. After considerably more prodding he finally blurted out: "Gosh, what nerve I would have telling you about model airplanes!" I was absolutely amazed at this remark and after he left I fell to thinking about it and perhaps my statement to him might interest a lot of other fellows.

As Editor of Model Airplane News my job is listening. My duties are to listen to model builders everywhere, listen to news of the latest type of control line mechanism, listen to a discussion of a new engine mount location, listen to an analysis of a new force arrangement, listen to a description of a new method of ribs-spar construction.

Yes, I've built quite a gang of models, a very hazy memory has lost count. I've learned a lot about model design and

model building. But I'm just getting started. And that term "I" stands for thousands of model builders throughout the U. S. and many foreign countries. "I" want to learn a lot more about model building. "I" want news of the latest developments in model construction in all parts

of the country.

Your job is telling "me" about model building. Tell "me" about that new high performance tow line of yours. Tell "me" about that super detailed control line that would pass for the real ship any time. Show "me" pictures of that new gas job with the smoothly curved rudder. Let "me" know how longitudinal stability can be achieved and just how "I" can incorporate those principles into "my" models. How "I" design a simple automatic pilot on my gas job? Tell "me"!

How can you tell "me" these things? Simply by rolling

How can you tell "me" these things? Simply by rolling a piece of paper into your typewriter and writing it all down. No English class essay, you understand. "I" wouldn't be able to make any sense out of it, because "I'm" just a plain old guy from the neighborhood. Just talk to "me" as if we were walking home from school, or as if we were up in your room "shooting the breeze" about modeling.

And you know, sometimes "I'm" pretty thick, so you'd better draw "me" a picture of the idea, too. Get a good grade of white drafting paper and some India ink and go to work. Nothing fancy, you understand. Fancy shading and trick rendering doesn't tell "me" any more about how to make that landing gear strut or the shape of the wing rib templates. wing rib templates.

You see, you've been roaming around looking for a listener for years, somebody that would keep their mouth

(Continued on page 44)



with that old super service.

it to do us both a lot of good. Keep your eye on this spot for more about it. Meanwhile depend on it . . . we'll back your orders up

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OFTEN discussed by private sources and advanced by various military commentators, the use of an Air Force as the prime "peace keeping" force for a postwar world policing agency has been advanced officially by Soviet Russia. Believing that the maintenance and use of a ground force made up of men from all the nations is impractical and complex, the Russians advocate establishment of an Air Force because the threat of Air Power might go much further towards halting aggression before it got started than the threat of ground armies. Further, a ground force would, of necessity, have to be quartered in a small neutral country and therefore, would be remote

early postwar years, with the signing of contracts calling for production of 108 Douglas transport planes. American Airlines purchased 25 Douglas DC-4 (C-54 Skymaster type) and 30 Douglas DC-6 (projected design now under construction) giants. United Airlines signed up for 15 DC-4's and 20 DC-6's. Pan American Grace agreed to 3 DC-6's. United indicated an order for 15 additional DC-6's would follow shortly and Eastern Airlines intends to purchase 15 of the same type. Donald Douglas stated these orders, in addition to several other American and foreign purchases now pending, would bring his total postwar peace time backlog to well above \$100,000,000 worth



Northrop P-61 Black Widow fighters are now in action. Here's two going ashore in South Pacific



First photo of Yought F4U Corsair fighter-bomber reveals giant 1,000 bomb in special belly ruck

from supplies and, probably, from the scene of the aggression. An Air Force of large bombers could be made global in scope and be, at all times, only a matter of hours away from impending hostilities. Responsible U. S. officials refused comment on the idea but it has been introduced at the peace conference where it will be discussed.

THE MUCH MALIGNED question of airlines and postwar transport designs has seemingly been solved, at least for the

of giant transports. The Douglas DC-4 cost \$385,000 and the new DC-6 about \$565,000 each. Travel time would be cut considerably with the 300 mph cruising speed of the DC-6, permitting a cross-country schedule of 8½ hours as compared to the present 17 hours.

NORTHROP P-61 Black Widow is now

NORTHROP P-61 Black Widow is now in actual combat in the various war theaters and is bearing up magnificently under optimistic promises expected of it. (Turn to page 66) Own the EXACT PLASTIC Models With Which "He" Was Trained





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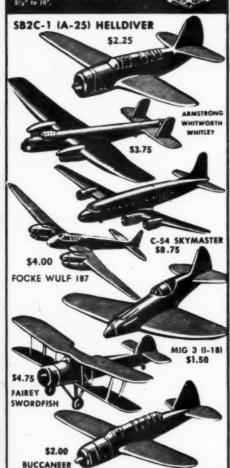
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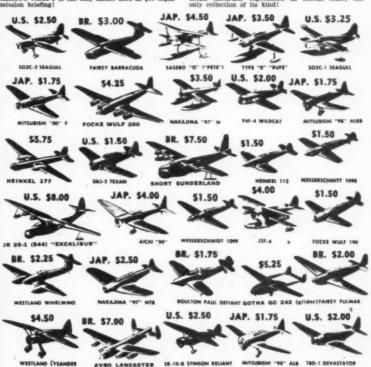
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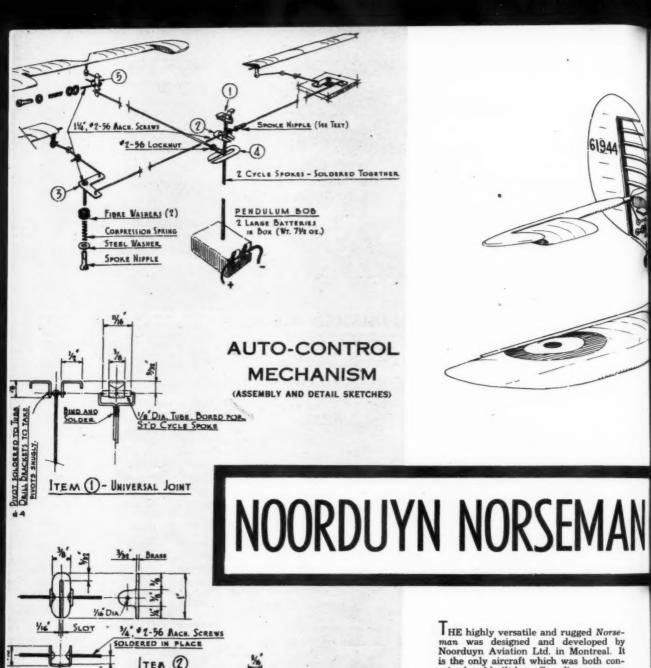
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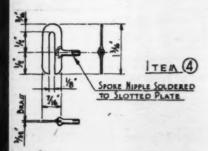
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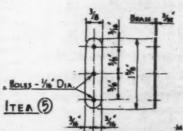
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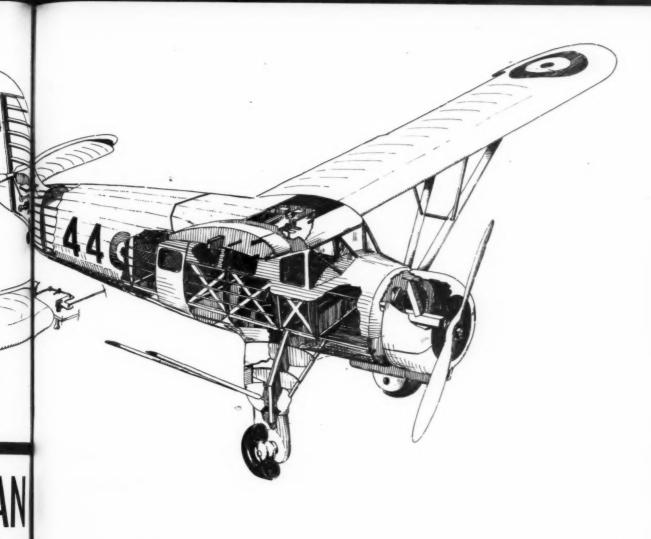
is the only aircraft which was both con-ceived and built by a Canadian company.

The Norseman was originally designed for "bush flying" in the remote areas of Canada and Alaska and its robust construction ideally fitted it to undertake the heaviest type of service in areas where maintenance and landing facilities were at best merely improvised.

Equipped with skis or floats it could be landed on lakes, rivers or even ice and its slow landing speed of 68 mph made it possible to fly in and out of relatively confined areas.

The military value of this small ship was demonstrated to the fullest extent during its extensive use on the Alcan highway. It proved itself to be "tops" in its class.

The UC-64A (Utility Cargo) is being built for the Army Air Forces by Aeronca Aircraft Corp., the fourth and largest military aircraft to roll off their assembly line. It has a gross weight of 7,400 pounds including cargo, carries six passengers in addition to pilot and copilot, has a maxi-



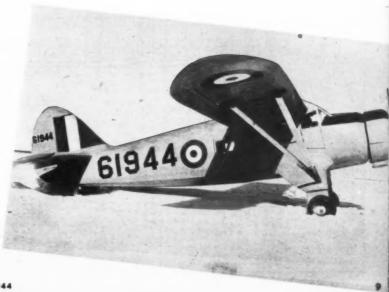
by J. S. LUCK

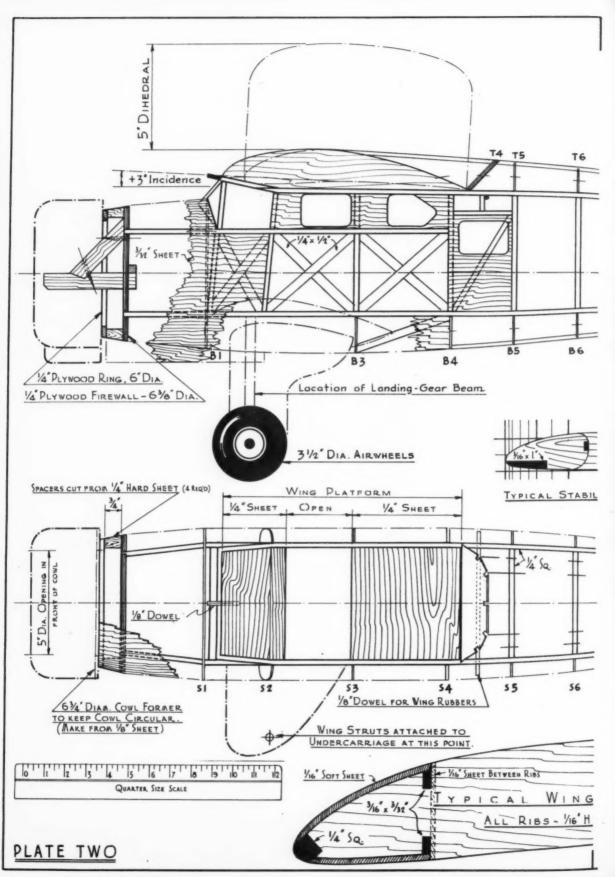
mum speed of 160 mph, and is powered with a 550 hp Pratt and Whitney "Wasp" engine.

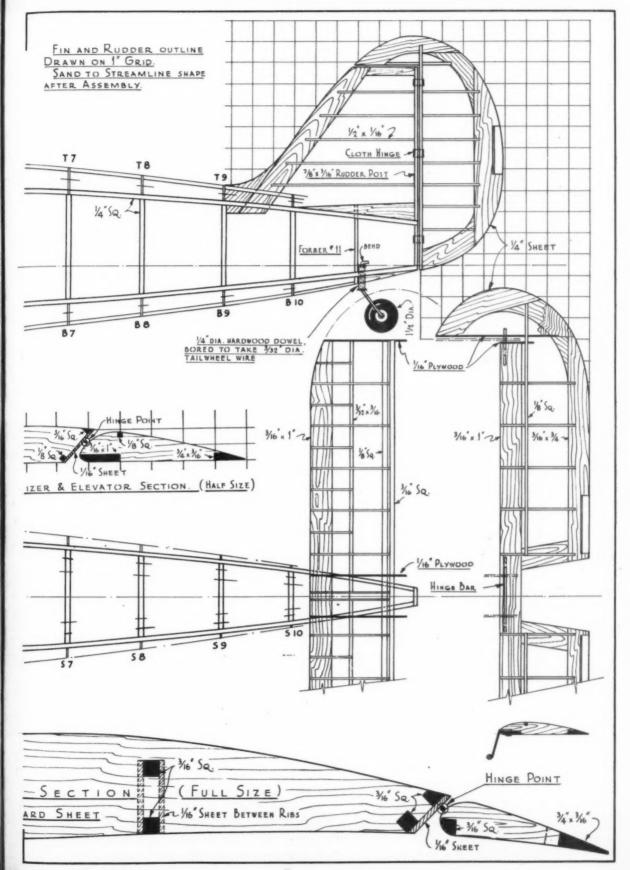
In presenting the plans for an eighth scale model of this ship it should be mentioned at the outset that it was quite impossible to include every minute structural detail in this article; as the reader can readily understand it would take perhaps a dozen pages of drawings alone to give a complete picture; however it is safe to say that the details given are cerainly sufficient to supply all the necessary information required without having to use more than a modicum of imagination.

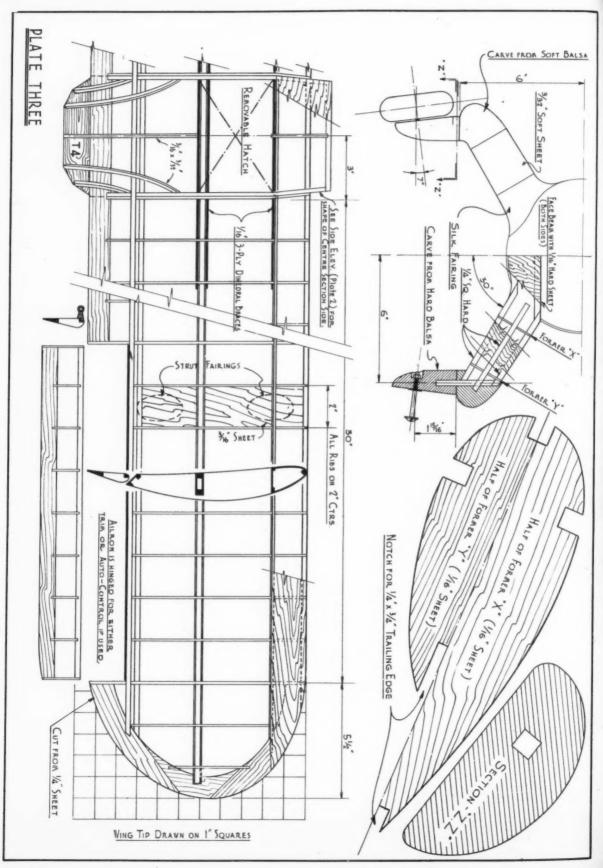
That the reader has glanced over the plans before reading this is certain; that he was perhaps a little confused at what appears to be conflicting information is at least probable. The author then hastens to explain that he has really presented three variations of the same model: (1) a simple free-flight scale job with fixed control surfaces; (2) a "goat" with movable elevator; and (3) a ship with ailerons and elevator activated by the automatic mechanism diagrammatically shown on Plate 1.

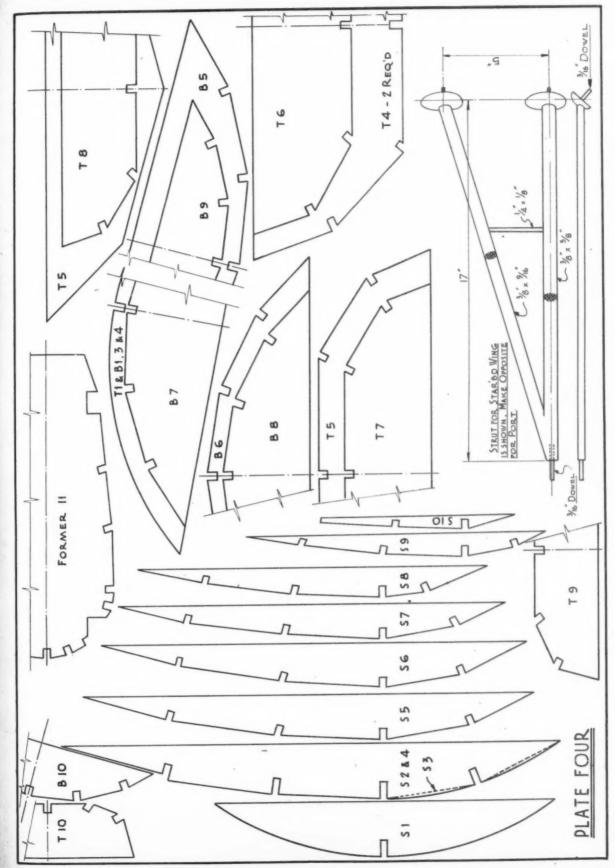
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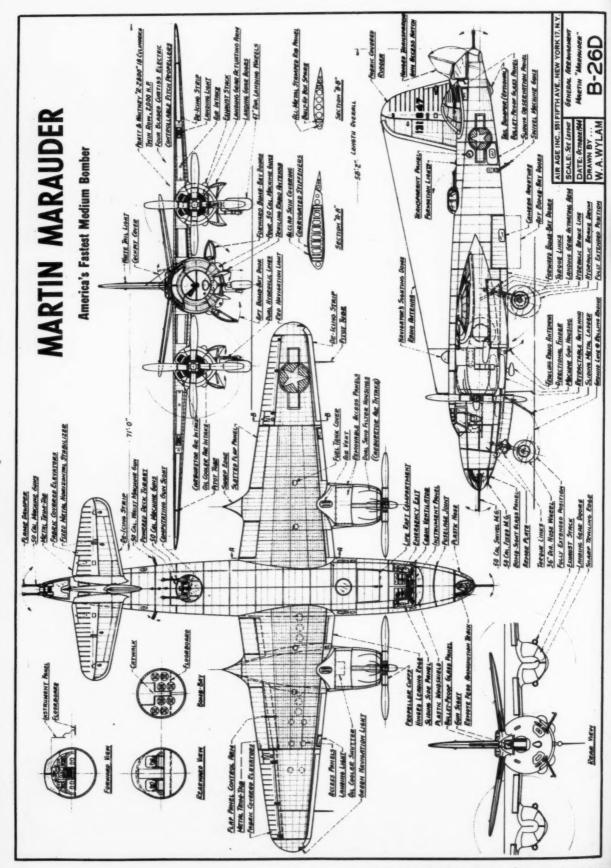














AVIATION in the mind of the average American, for some unknown reason, is always divided into two historic periods: the "early days," indicating that period between 1903 and World War I; and "modern aviation," those years since the Armistice. Within these two arbitrary categories the great names of aviation are always divided. Mention any famous aviation personality and he is immediately mentally assigned to either the "pioneer" or the "modern" category.

When names of the great pioneers in aviation are mentioned, Wright, Langley, Curtiss, Ely, Beachey, Maxim, etc., there is no question concerning their place in history. But one of the strange habits of the aviation fan is to characterize Glenn L. Martin as a modern. While this is true it is only part of the story for Martin's career, unlike that of any other modern aviation designer, has spanned both periods and in each he has claimed, justly,

a preeminent position. When we read of the terrific attacks by Martin Marauder bombers, hitting the enemy on every war front, it is difficult to believe that the designer of this potent weapon once rattled crazily aloft in a skittering crate which he had designed and built himself in 1909! Glenn Martin was flying his own airplane just seven days after Bleriot had crossed the English Channel; and BEFORE: Eugene Ely had landed on and taken off a ship, Curtiss had taken off in a seaplane, Orville Wright had remained aloft for one hour, Lincoln Beachey had flown over Niagara Falls and Roland Garros had established a world's altitude record!

Glenn Luther was born in Macksburg, Iowa, on January 17th, 1886, the son of C. Y. Martin, a hardware merchant. Two years later the family moved to Liberal, Kansas, in search of better business conditions. In 1892, at the tender age of 6, Glenn built his first original kite design, a biplane affair which immediately became the envy of his fellow "fliers." Aware of the tremendous possibilities of

this emotion Martin started his first aircraft production line: biplane kites at 25c a copy! In 1895 Martin, Sr., moved again in quest of business profits, this time to Salina, Kansas, where Glenn worked in a bicycle shop after school.

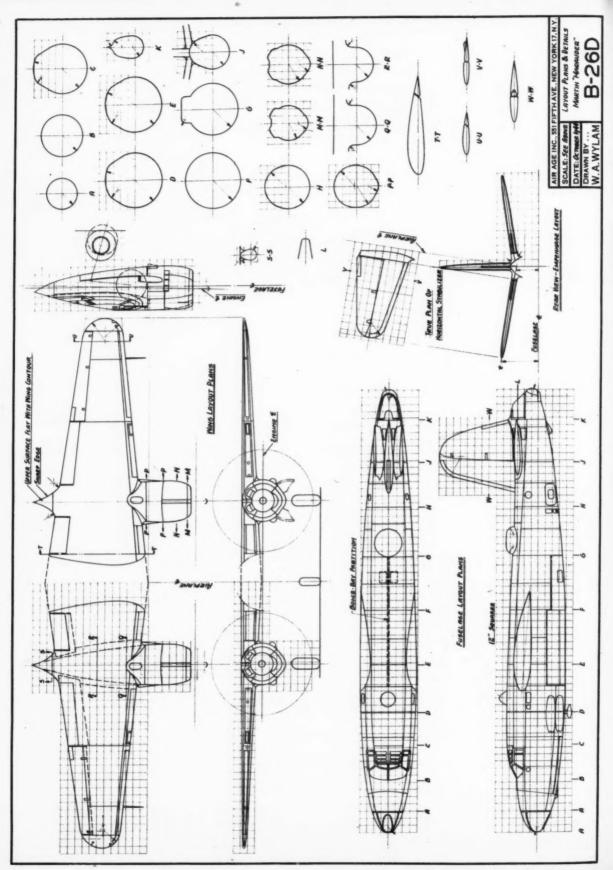
With the advent of the automobile, Martin shifted to David Methven's Garage and his mechanical aptitude soon made him a top notch automobile engine man. His knowledge of the internal combustion engine, experimental as it was in those days, convinced him of the future possibility of the type and he quickly acquired a profound respect for Henry Ford and his amazing motors.

Martin entered Kansas Wesleyan University where he studied business economics, the rudiments of which brought him safely through the years to come with his own private, personal company intact. Without such business acumen, Martin's firm may long since have been bankrupt, merged or absorbed into any of dozens of different combines which obliterated the names of so many pioneers in the hectic aviation business.

One day in 1905 Glenn Martin picked up the Salina newspaper to read the startling news that the Wrights had remained aloft for 1 minute 40 seconds, and for the first time man had made a real flight—not just a hop. At 19, Martin quickly compared his successful biplane kites with the Wright airplane and confided to his mother, who is today still right by his side, "It's just like my kite, only with propellers to push it!" Martin had, with that statement, made a decision that has not been changed: he could build a successful airplane.

During the year, Martin, Sr., accepted a position with a hardware firm in Santa Ana, California, a tiny village 40 miles southeast of Los Angeles, itself only a small town at the time. Glenn immediately found a job with a local garage and after a short time launched his first business enterprise: Glenn L. Martin,

(Turn to page 17)



#### MARTIN

(Continued from page 15)

dealer in Ford and Maxwell automobiles! His firm was a distinct success and within a year Martin showed a \$4,000 profit, quite a lot of money for a young man to make in 1906.

In his spare time he built larger and larger models of his biplane kites until he soon had a man-carrying glider. Early mornings found him racing over the hills and gulleys of the countryside near Santa Ana. He spent 1907 in such experiments, and early in 1908 he began construction of a full size airplane. The Southern Methodist Church moved into a large new church building, leaving its tiny former site. Martin rented the abandoned church and went there every evening, often with his mother, to make ribs and glue fittings. On blocks in a corner stood a 4-cylinder Ford engine capable of a full 12 horsepower; and nearby was a hand-carved propeller.

Months elapsed during which the weird contraption took shape, muslin was applied to the wings and they in turn installed on the main frame with the flying wires in place. The engine was mounted and the plane finished during July 1909. For fear of arousing a disturbance, Martin towed his airplane from the church during the night to a pasture on the outskirts. At the crack of dawn on August 1, 1909 Martin started the engine, raced across the field and left the ground. He flew in a plane of his own design and construction—without ever having seen an airplane!

That first hop was only just that, covering little more than a hundred feet—but Martin was in no hurry. Future hops became longer and longer, finally clearing the fence at the far edge of the field. Although he had lightened the Ford engine by fitting a copper crankcase, it became evident that more power was needed regardless of weight, so he installed a 30 hp Eldridge marine engine. With this great power he was soon actually flying several hundred feet in the air and executing various cautious maneuvers.

Always the business man, Martin began early to realize some return on his \$3,000 investment by taking passengers for rides. Soon the curious were driving all the way from Los Angeles to see this amazing young man and his flying machine, and the daredevils in the crowd boisterously hopped on the wing as the 24 year old "wild-eyed, hallucinated, visionary" (sic) young man collected the fares and made the customary circuit of the pasture.

The little church was quickly outgrown and Martin rented

The little church was quickly outgrown and Martin rented an abandoned Santa Ana cannery in which to build more planes. The Glenn L. Martin Co. was launched on a career that was destined to carry it through more than three decades of success. While other aviators were doing exhibition stunts and gaining fame as daredevils, Martin was seriously attempting to make aviation a paying business. Passenger hops in the Los Angeles area began to jingle the till and he received \$2,000 for carrying a message from the Mayor of San Francisco to the Mayor of Oakland across the Bay. A barnstorming trip through Texas, Kansas and Iowa brought him \$12,000. Soon, aviation became a paying business for Glenn L. Martin and he moved his "factory" to Los Angeles. Hollywood brought him many screen stars as passengers and he too became a star, playing opposite Mary Pickford in The Girl of Yesterday. His serious piloting technique brought him one of aviation's historic honors: Expert Pilot License No. 2 from the Aero Club of America. It was on May 10, 1912 that Martin's name smashed the headlines and his fame was securely established, for on that day he flew from Newport Bay to Catalina Island and back, a distance of nearly 60 miles!

The first Martin production machine was the model TT, an amazingly modern tractor biplane that was sold to the Army in 1913 as its first trainer-bomber. Flying the plane himself, Martin conducted the Army's first bombing experiments on North Island, San Diego, California, during the year. One version of the TT was fitted with thin sheets of armor plate along its sides and was delivered to the Army late in 1913, the first armor plate airplane. Still another version was to be recorded as America's first multi-passenger airplane when Martin placed a seat beside the two regular seats, making a total of four in all. The plane was produced for the firm of Gorat and King to fly passengers across Coos Bay in Washington, and giant headlines screamed the news that the "air-liner" head been been which indeed it had

liner" had been born, which indeed it had.
On January 10, 1914 Martin soared aloft with "Tiny" Broadwick, famous girl trapeze and stunt artist, as passenger. On her back was strapped a strange new device perfected by Martin and Floyd Smith, one of his factory employees. At 3,000 feet the slim girl plummeted over the side and floated to safety, and another era in aviation was harbingered by Glenn L. Martin.

War clouds threatened and then broke in a storm during August 1914 and Martin's Los Angeles factory was swamped with orders. Four months previously he had taken to the air in another aerial innovation—an airplane armed with a (Turn to page 36)



Martin MB-2, completed at Armistice, was flown by Gen. Billy Mitchell



Martin XB-907 was Flying Whale hi-speed design that set style for Army



Martin B-10, standard production version, comprised Army heavy bomber force

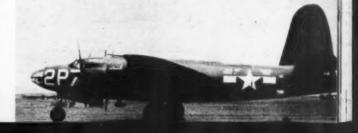


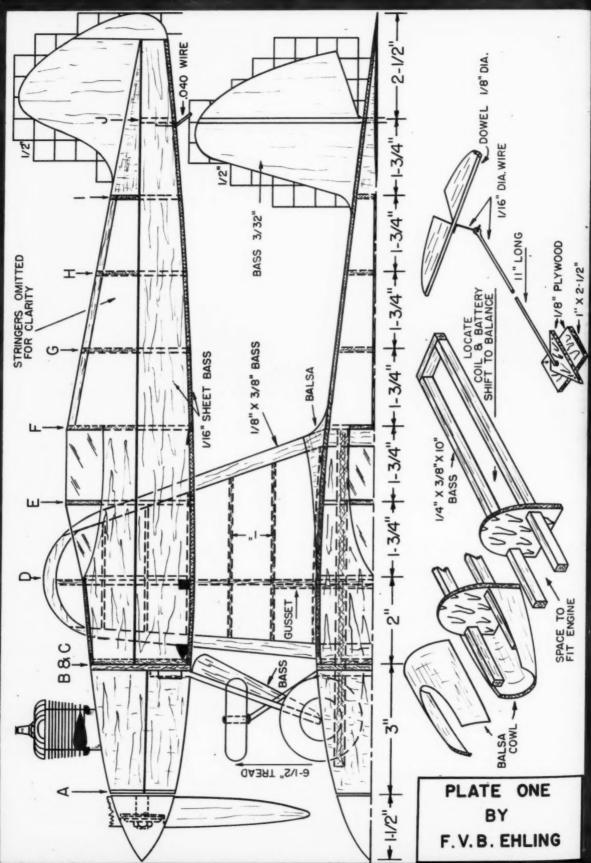
Martin Maryland was delivered to French Air Force, saw service in Royal Air Force



Above, first experimental Martin B-26 was fastest Army bomber ever tested.

Below, the Marauder, production B-26, spearheaded the invasion with attacks on rocket coast. Now in action world around







by F. V. B. EHLING

IN THESE times ships should be designed to take advantage of the engines and material on hand. The Texas Wildcat does this to perfection. No matter what engine you mount in her nose she will make you proud of her once you have her out on the line. With a large prop and a 35 in. motor this ship cuts through the air with a good clip. Even with a small engine you can make Granddad's hair (singular) stand on end.

While the ship shown has a sheet wing, the original was built up as shown in the photo. The ship handles smoothly as a B-17 and maneuvers like a P-51. So you see you cannot go wrong building this job.

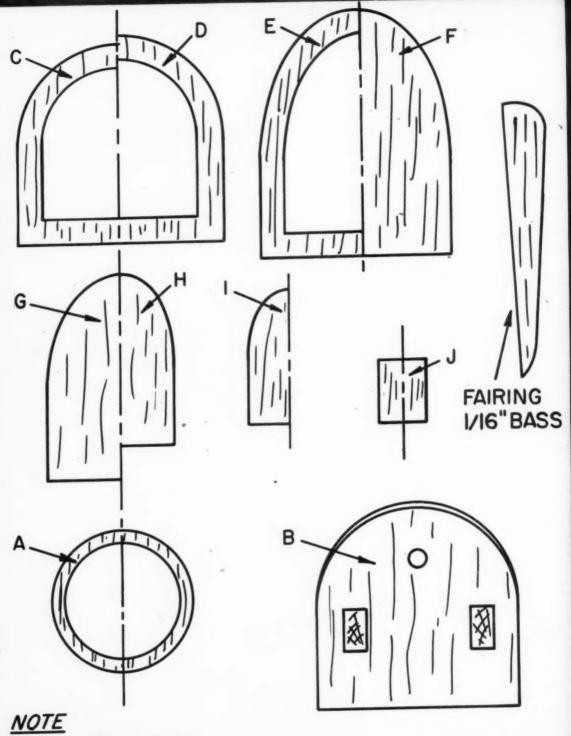
Clear away those cobwebs and get down to making one of the finest ships you ever built. The plans are clear enough, so even if you never previously built a gas job you will encounter little or no trouble in turning out a fine ship. The fuselage is made in sort of a crutch construction, yet the sides are used as a crutch. This eliminates the danger of getting out of line.

To start actual construction, scale up plate one. This will have to be enlarged twice the size shown, either by photostating or with a pair of dividers. Cut out the two sides along with the required formers. Cement the rear together and add (Turn to page 35)

The beginner will find this "hot" control line plenty "cool" on simplicity of construction



MODEL AIRPLANE NEWS . November, 1944



B &C 1/8" PLYWOOD ALL OTHERS 3/32" BASS

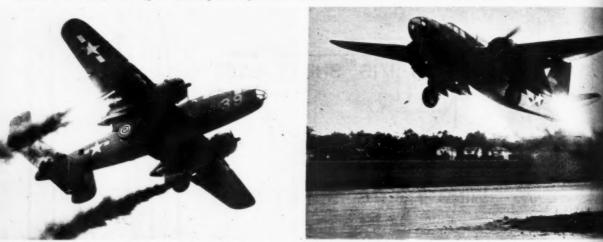
PLATE TWO BY F.V.B.EHLING

RIBS - 2 EACH REQ. ALL RIBS 1/16" SHEET BASS WING TIP-1/8" SHEET BASS 2- REQ. WING SPAR I/8" BASS WING GUSSET I/8" SHEET BASS 2-REQ. I-REQ. PROP TEMP. PROP BLOCK 10" x 3/4" x 5/8" PLATE THREE BY F.V.B. EHLING

### AIR AGE FRONTIERS



Revealed at last: the potent sting of the Boeing B-29 Superfartress! Here are the remote-control .50 cal. turrets and the 20 mm. tail cannon



Results of four years of experiment in rocket-assisted takeoff are shown here as Mitchell, left, and Havoc, right, leap from short runways

Below—here's first helicopter contracted for by the Army Air Forces, the Platt-LePage XR-1 just completed. Extended rotors improve stability





One for your memory book: the last Hawker Hurricane to be manufactured. Hurricane record is outstanding, downed more E.A.'s than any fighter







Guns, guns and more guns! Left, nose of latest Mitchell with eight .50's! Middle, B-29 remote turret and sighting station. Right, tail cannon on B-29



Russian D.B.-3A's now mount torpedoes plus auxiliary fuel tanks under belly. Here's a pair operating over the Baltic Sea against Nazi shipping
Below—new Model 9 by Aeronca Aircraft Corporation is firm's bid for post war private ownership. Low purchase price and flight economy are stressed







HE problem of adjusting a model is of primary importance to the model builder. By glancing at the lists of winners at most contests one can readily verify the statement that there are a select few who continually place high in all events they enter. Those fellows really know how to adjust a model. Of course they really build a fine ship, but the thing they cash in on is their adjusting.

Most of these so-called experts are actually, in a true sense of the word, experts at adjusting. It is not an uncommon sight, on the morning of a contest, to see fellows out bright and early merely to get in those last few tests which usually mean the difference between winning and "also entered." By this I do not mean to imply that they forget about testing until the morning of the contest; those last few tests are really checks to see if the "ole crate" is still ticking. Fellows like Frank Parmenter fly their ships continually until they get the most out of them. This period of testing usually lasts for weeks in his case. Small wonder then that he cleans up, for he knows his ship is good and that it is really ready when the time

There are various methods of adjusting but all usually end up in a sweet flying ship. Some fellows advocate offsetting the thrust line, some use a lot of down-thrust, some up-thrust; there are a few who set the motor in straight and will not change it. Some fellows adjust by merely changing incidences; then there are those who deliberately misalign the tail in order to get those dream flights. All the above are good, and frequently a combination of several must be used in order to obtain a good flying ship.

For a long time most everyone has tried to pound into the head of the builder that the wings and stabilizer or horizontal tail must be perfectly in line in order to obtain good flight. This warning was all well and good for the advisers knew that a misaligned tail had very upsetting and

unstable tendencies. In fact, over two years ago I noted that it was perfectly possible to make a model circle against both rudder and thrust merely by offsetting the horizontal tail in roll. But no one thought of using it as good adjusting technique.

Recently it was my good fortune to witness the quite expected results of merely tilting the tail out of line with the wing but in regular adjustment, Frank Parmenter was the fellow first observed using it and it seemed to work out quite well. When he has trouble getting a good combination of power and glide flight he will often do this. It causes the tail to skid much the same as a model does when it makes a flat turn. This does not seem to change the power flight as much as it does the glide. In this manner he gets a very flat, tight circling glide which enables his ship to ride the slightest thermal with the greatest of ease.

In my opinion the best power flight is a flat turning climb. This is obtainable by a combination of thrust adjustment and wing warpage. It is best in most instances to eliminate wing warpage, for by washing in a wing—that is, lowering the trailing edge—you increase the angle of incidence which in turn causes one wing tip to stall before the other. In some cases this causes a ship to wander in the glide, because while one wing stalls slightly, the other generates more lift. You would think the opposite to be true, and sometimes it is, for the warped wing will act as an aileron that is depressed thereby raising that wing higher and generating more lift. But since we fly models with the wing so close to the stalling point we occasionally run into that wandering glide. We can remedy this situation in most cases by causing the tail to skid around in a circle.

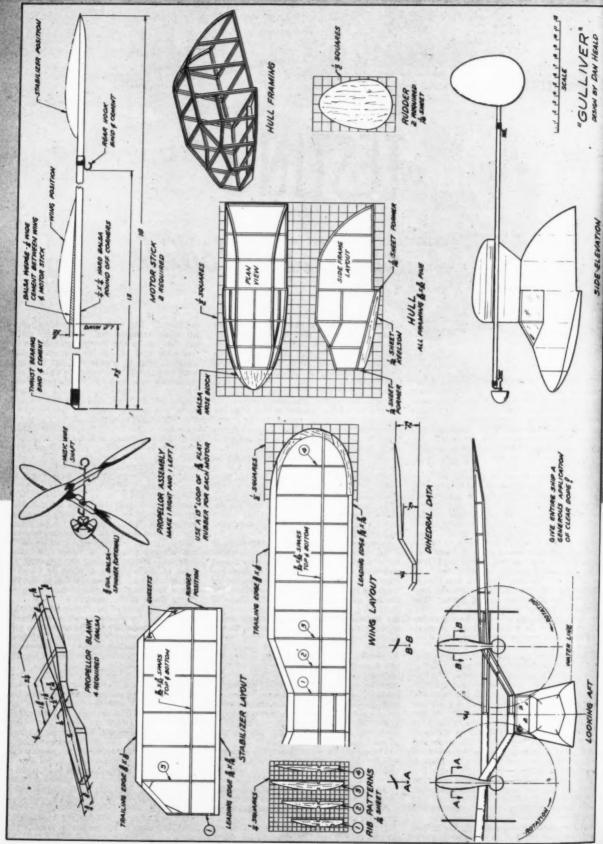
Thousands of words have been written about the exact testing procedure for models, and most of them seem to agree on a few points, namely: test on a large grassy field on as calm a day as possible. This is important, for no two models fly alike. If a builder is careful he can duplicate the original model very closely, and it is possible to design a model which will, to use the phrase, "fly right off the draw-

ing board." But to do so he must be careful while building the model. He must get the c.g. in the correct position, and the wing and tail in their proper relationship, that is, incidence; last but not least he must get the motor in right. Presuming he has been faithful in reproducing the drawings, chances are his test flights will not give much trouble; he will have only a few small but very important adjustments to make.

Probably the best procedure to follow is to get a very desirable glide and then proceed to adjust for power flight. To start with, try to keep the c.g. fairly well forward. By doing this you will increase longitudinal stability and stop a lot of trouble before it starts. It is best, for very obvious reasons, to have a fairly tight circling glide and still have it float. The model should be made to glide very flat before test flights are made. Do not make the mistake of getting a glide that mushes down instead of gliding forward. It is not always possible to move the wing fore and aft on present day models, so most of the adjusting is done by varying the incidences. If possible try to fly the tail at zero angle of attack. Let the wing do its share of the work.

Probably most of you know how to take out a stall by decreasing the incidence, and to increase the incidence to stop any diving tendencies. This method of preliminary adjusting should be carefully done because power flights depend largely

on glide adjustment. "All right, so we have a good glide-how about those "power on" tests? Star with the motor turning over slowly but smoothly, and with the timer set for approximately eight seconds. Too little time causes the motor to quit just after launching before you know what it is going to do; and too much causes many a broken model. Add power gently—do not jump at conclusions until the ship is flying at approximately half power. Now is the time to pay a little more attention to the glide. Is it just right or do I detect a slight stall; or is it gliding too steep? It is stalling; well, take out about one-sixteenth incidence. What? It still stalls? Try decreasing the incidence some more. (Turn to page 52)





Lots of modelers have wanted to try a hydro but most are too complex. Here's simplicity with plenty of performance!

'GULLIVER'

SEAPLANES are admittedly among the most difficult types of models to make perform satisfactorily. For this reason there is a decided lack of plans and those available usually possess a number of complex curves, difficult and heavy to construct, so that the average modeler is discouraged before he starts. However, Gulliver is extremely easy to build and is one of the snappiest little eye-catchers we have ever seen. It really looks like a scale of the postwar sportplane, but even a beginner will find absolutely no difficul-ty in construction. Performance is not amiss, either, for Gulliver really travels!

Its takeoffs are smooth, and steady like those on a full scale hydro, and the climb

is terrific, due to the powerful twin mo-

by DON HEALD

tors A word about the force set-up. Twin engines with contra-rotating props were found necessary to eliminate torque and the resulting tipping to the left. A large lifting stabilizer allows the c.g. to be aft of the c.l., thus overcoming the weight of the motors aft of the wing. The single hull with no tip-floats performs well on the takeoff and affords much less drag in flight but proves slightly unstable in gusty weather and on landings, so spon-soons may be used as indicated on plans. The flat section of the hull, aft of the step, keeps the model exceedingly steady on

the takeoff. A low aspect ratio is used on the wing to keep the span to a minimum, thus centralizing weight as much as possible. The float design, with step directly under c.l. is the result of a good deal of experimenting and really gets her off. All in all, Gulliver is just about tops in rubber-powered hydros. But don't waste time drooling over those beautiful lines, let's get started on construction.

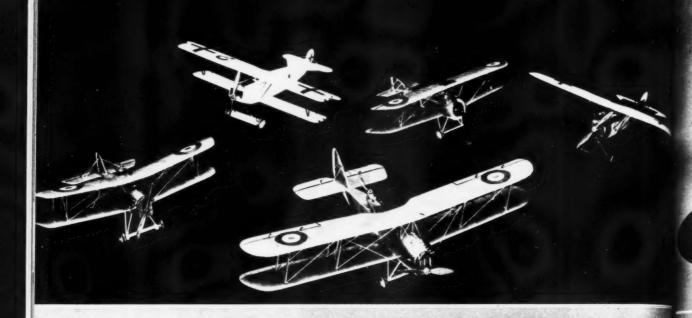
After looking over the plans thoroughly it is apparent the model must be kept as light as possible. Use your own judg-ment about keeping down the weight and be sure to sand every part well. The hull is the conventional box-type, so first lay out the two sides of 3/32" square hard balsa or pine to prevent sagging under extreme pressure of many coats of dope. Be sure the sides are the same, for perfect alignment is important on the hull. Then join them together, starting at the 4th and 5th station and working forward and back, carefully keeping the top narrower than the bottom as shown. Next cut the keel piece, H1, and the formers, H2 and H3, and glue in place. Add the nose block, and the body is ready to cover with silkspan. Use 1/32" sheet balsa on the bottom aft of the step; however, silkspan will produce a better curved job on the bow. Cellophane is used on the windows for scale effect, but leave some spot open

to allow for pouring out any water that

Don't let the gull-wing fool you, it is very simple to build because of the entirely flat bottomed airfoil section. Lay out the entire wing all at once, adding  $3/16'' \times 1/8''$  leading edge,  $3/8'' \times 1/8''$  trailing edge, 3/32'' square bottom spar, and 1/16'' square top spar in outer panels only. When dry, break exactly at the two gull points, leave the 2" center section pinned flat, and prop up the third rib 1½" and the tip 2". Make sure the chord of the outer section is level with the workbench. Add the top spar to the inboard panels, gussets for strength, and your gull-wing is finished! Just as easy as ordinary polyhedral! Cover carefully with Japanese tissue. I have found that covering grain chord-wise rather than span-wise, as is usually preferred, holds the airfoil better with no sagging.

The stabilizer is built up from 1/32" sheet ribs, 3/32" square leading edge, 3/16" x 3/32" trailing edge and a 1/16" square to spar. Add gussets to tip rib which should be extra strong to support the twin rudders. These are cut from soft 1/16" sheet, doped and sanded well (scallop leading edge with red if desired). Add after stabilizer has been papered.

The two 19" motor booms are made of (Turn to page 44)



## AIR WAYS



Top of page is No. 1 Real fans of World War I solid scale jobs will appreciate this superb collection built by Pvt. Charles M. Keegan of Cleveland, Ohio. Above, No. 2 Who wouldn't go in full steam for seaplane design when it can be this much fun? Below, No. 3 Here's real control line modeling, a Curtise SB2C-1 Helldiver by Bill Noonan



WE READ a great deal today about "reconversion," "termination," and other high sounding phrases and the debates taking place in Washington between various agencies over post war planning. It seems the more we read about these subjects the more complex the picture grows and the less we understand what is going on. The recent controversy in the W.P.B. is a case in point.

We are apt to accept "conversion to civilian production" as meaning the automobile, vacuum cleaner and household article manufacturers. But all these discussions have a very direct bearing upon the modeler and, as such, we should all take a personal interest in them.

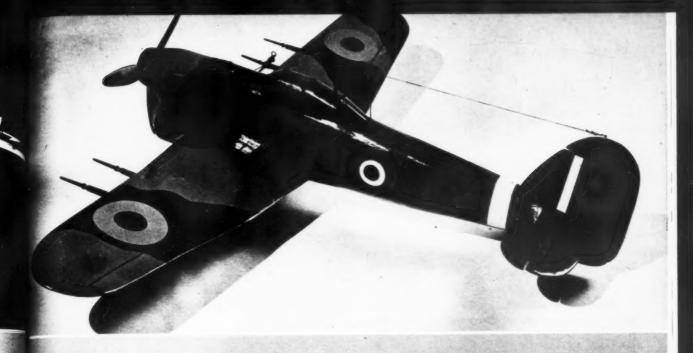
The model manufacturers, motors, kits

The model manufacturers, motors, kits and supplies, have almost without exception been converted to war production over the past three years. In the case of certain motor manufacturers, their production since the outbreak of war has been 100% on war goods. For this reason there has been no production on model motors, coils, condensers, batteries and various model supplies.

These model manufacturers cannot re-

These model manufacturers cannot resume production on model motors and supplies until the W.P.B. says so, and thus are in the same boat with the automobile, radio and refrigerator manufacturers.

A typical former model motor manufacturer's plant operates something like this: he will be manufacturing anywhere from 50 to several thousand small parts for prime contractors. Some of these items may be even sub-assemblies or major assemblies for airplanes, tanks, radio equipment or guns. Each of these items is being produced under a separate contract specifying the exact number to be built, how much he will be paid and just when each part is to be delivered. Thus, this former motor manufacturer will have



#### News of model plane experimenters from all parts of the world

from 50 to several thousand separate contracts on an equal number of separate

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projects.

Obviously, when one of these contracts is finished and all the parts delivered, the manufacturer is hardly ready to resume building motors. He has 49 other contracts on which he is still working! Such men and machines as may be released by the termination of this odd contract will, of course, be put to work on one of the other projects to speed that one along. Other contracts may be finished up and other men and machines reassigned.

other men and machines reassigned.

It is natural, however, for the Sales Department to continue bidding on other jobs, to continue contracting for such work and to continue bringing in new contracts all the time. In many instances the Army approaches the manufacturer with a specific request which, due to the war and patriotic efforts to do all he can, the manufacturer can hardly refuse.

Thus there are no manufacturers who are making a single product on a single contract which will be finished at a certain time. In such a case, when the last

tain time. In such a case, when the last part had left the shop the manufacturer

part had left the shop the manufacturer would be ready to resume motor manufacturing providing he obtained the necessary releases, etc.

Most of us modelers have been thinking in terms of this single contract idea and have been confidently expecting the return of new motors to the dealers' helves. Perhaps we can all see now just how difficult, if not impossible, it would be for a manufacturer to return to building model motors. model motors.

Ing model motors.

However, when Congress or the W.P.B.

or the President or the various agencies involved consummate a definite policy of reconversion and establish it in law, then a more practical approach to the problem will result. Such a policy might, let us

(Turn to page 54)



of page is No. 4 Fine modeling and fine photography is the tin busy Dr. Arthur Johnson's spare (?) time. Above, No. self fooks like he means business! Below, No. 6 Wendell Row should look like reaf airplance





No. 7 This Hawker Hurricane photo comes all the way from South Africa where D. Schonogevel is an S.A.A.F. student pilot and ardent model builder



No. 8 Ormand Eckley, modeling Canuck, built this fine pair; a De Haviland Tigar Moth, left, and a Flessier Starck, right, all contest wieners



No. 9 Bob Finlay built this detailed scale Douglas A-20A Harvec



No. 10 Here's a Lockhood P-38 Lightning by Bernie Niffenegger from M.A.H. plans



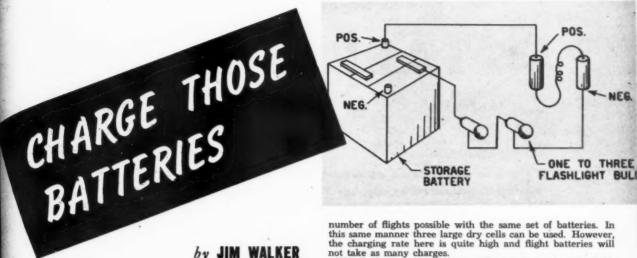
No. 11 Fract's Fally is an antirely original control line design with unique mold technique



No. 12 Sgt. M. Gilbert and champion Fertical







THE nation-wide cry among model builders now seems to be: "What am I going to do for batteries, there isn't a flashlight cell in town?" The answer is simple, strange as it may seem. The answer is simple, strange as it may seem. Dry cells can be re-charged, though not in the same sense as a storage battery. The correct terminology might be "depolarizing or reactivating." The procedure is as follows—

The model should have booster connections that are parallel

with flying batteries. Two cells of a storage battery are then used as a booster, and between each flight boosters are connected for 10 or 15 minutes. This will more than triple the

this same manner three large dry cells can be used. However, the charging rate here is quite high and flight batteries will not take as many charges.

The foregoing is merely an expedient to be used on the field. In order to get extreme number of flights from one set of batteries, it is advisable to cut down the charging rate by connecting a 2-1/2 volt flashlight bulb in one booster lead. Always remember that the slower the charging rate the greater number of times the cells can be re-charged. A high charging rate tends to heat the battery and dry out the paste which naturally makes the battery useless.

A simple charging rack can be made with leads to clip on to a car battery, and one extra set of cells can be charged while flying. Use only 4 volts of storage battery. Connect positive to positive, negative to negative. (See sketch.)



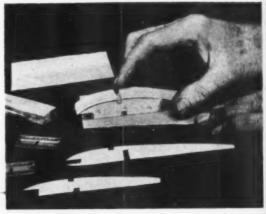
RIBS for model airplane wings can be cut in quantity by stacking and holding the stock (for eight to twelve ribs) evenly together with pins, then trimming off the waste with a razor blade sharpened on sandstoned A cardboard rib pattern aids in determining the rib shape before outlining it on the stock.

After cutting off the waste and notching for leading edge and inner spars, the stack of ribs held together with pins should be sanded by drawig the top and bottom edges of the stock over a sheet of fine sandpaper to smooth the ribs into finished shape.

If ribs of shorter length are desired for tapered wings, cut the ribs in airs to desired width of the taper by removing a portion of the trailing edge but retaining the curve or camber of the leading or front edge.



Above shows "stack cut" method and below is "group sanding" technique





SO FAR in this series we have covered all the types of materials used in model airplane building, and the tools useful for the various operations. An understanding of these things is the basic requirement. Now, however, we are ready to start with the actual construction information and this series in the future will deal with the many structural problems encountered in model building.

This chapter describes the actual methods of model building to get the best results from the material used.

Most articles on the construction of a particular model are of necessity rather broad and abbreviated, which makes it very difficult for the beginner in this fascinating hobby to do justice to a model. There are always many points about which he is in doubt and the model probably suffers thereby. Even the most detailed articles are not sufficient, for it would take a good-sized book and a hundred or more illustrations to completely describe every step in the construction of a specific model so there would be no possible doubt left in any point.

As an introduction we will take up the simple operation of joining together two pieces of wood, and go on through the fuselage and wings to the completed model so that the beginner, after reading the detailed points, will be able to take the average, well written model building article and construct a fair reproduction of the original, and not have to stop many times during the building to puzzle out

various points that the author was forced to omit.

#### JOINTS

Since wood is the basis for most model work we shall consider its use first. The simplest form of woodwork use is that of joining two pieces together. As nails are seldom employed in this age of balsa—or to be more exact, seldom in the United States—we shall not give much space to them. Nails, of course, are used only with the heavier woods such as pine or spruce because balsa is too soft to hold them in place securely. Tiny holes should always be drilled in the wood before putting the nails in place. In any case where nails are used the joint should be smeared with glue before assembly and the excess wiped off after the nail is driven.

Tiny screws are also used at times, particularly in the larger models such as the compressed air and gasoline types. Small holes are also drilled in this case but glue is not always used. Quite often screws are used so that some part, such as a wing strut, may be readily removed.

With balsa wood, the strength of the glue alone is sufficient to hold the pieces firmly together. Sometimes thread is used to bind the pieces more tightly. The thread also serves to hold the pieces tightly together while the glue is drying, and of course, the joining is thus greatly strengthened. A so-called butt joint is not very strong but can be used in many cases, especially if glue is well spread over the joint; this adds much to the

strength. A butt joint is rather poor practice, however, and the lap joint is much better. The distance overlapped should not be less than twice the width of the strip, and three times is not too much. If the joint is apt to be bent at all it should be strengthened with a strip on either side. Butt joints are used mostly in fuse-lage construction. In this case the covering of the completed model keeps the structure rigid and prevents any twisting motion which would surely loosen the joint.

Where extra strength is needed, thread is employed and the whole joint thinly coated with glue, the result being a joint considerably stronger than the wood itself. These thread strengthened joints should always be used when working with pine or spruce or other such types of wood.

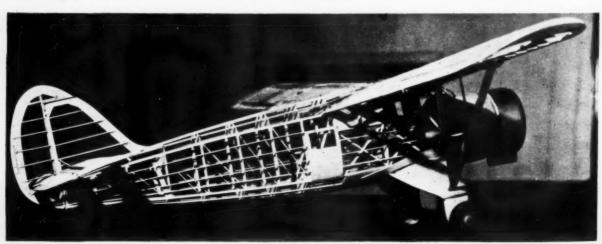
While we are on the subject of joints, a few words on cement are in order. As we have pointed out, the nitrate cements are the only ones widely used by modelers. It should be emphasized here that the wood or other material to be fastened with such adhesives must be quite dry because they cannot "take" properly on a damp surface.

Water-soluble glue is not recommended. It is made of skim milk and comes as a white powder which is mixed with water and must be used within several hours after it has been mixed. Once it dries it cannot be softened again because a chemical change takes place. This glue is waterproof when dry and it possesses great strength, for which reason it is widely used in the construction of mancarrying airplanes.

The glue which comes in collapsible tubes is the most satisfactory for model work. A six-inch length of No. 12 or No. 14 copper wire is used as a combined stopper and spreader. When the glue is used from jars or cans it invariably dries out and thickens too quickly. Acetone, which is a solvent procurable from any druggist, is suitable for thinning out the glue. The tube is easiest to use, however, since the glue can be applied directly to the work without any chance of spilling or other bother. In any case, whether in tube or other type of container, it should be kept closed when not actually in use. With the tube, the small area exposed to the air makes this less imperative, but it should be followed nevertheless.

VICTORY

aibitt



The importance of good joint technique is clearly illustrated here in this structure shot of J. S. Luck's Noorduyn Norseman presented on page 8.

HERE is an unusual model, strictly experimental. It is a semi-scale version of the Nazi robot bomb used by Hitler against Southern England. The model follows the design as it appears from limited information at the time of writing. This, in turn, has been slightly modified for flight efficiency. We might add that if you want it to fly well you must be sure of your power unit. Do it right and it will work well. Since the ship is in the "X" category, why not try your own fuel mixtures and utilize the best results? We will be glad to hear from you.

will be glad to hear from you. The fuselage is carved from a light balsa block one inch square by 8-1/2" long. It is perfectly round in cross section except from the first barrel strut to the tail post. Refer to the side view for the correct contour. Sand and check the symmetry, then put the body aside. Now trace half the wing onto 1/8" x 2" medium

by BOB MACDONALD

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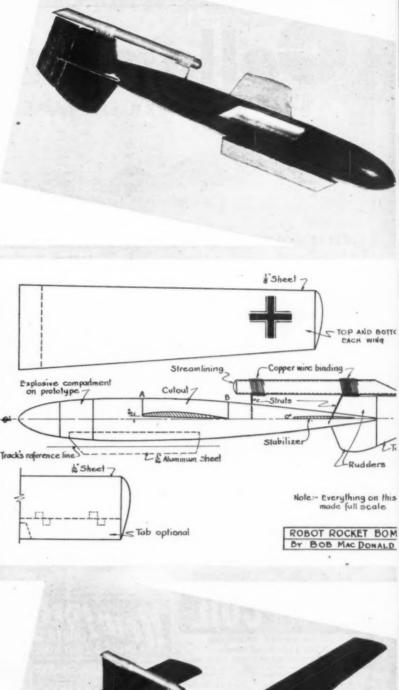
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# 'rocket bomb'

stock. Cut it out and use it to outline the other half. Now bevel each half at the center for the 1" dihedral under each tip (the angle is 7 degrees.) Join the halves by imbedding two headless pins and applying a lot of cement. Carve the airfoil shape shown with a sharp knife and then fairly rough sandpaper. Finish it with finer sandings.

Now join it to the fuselage by cutting out section A-B, retaining the 3 degrees incidence. Cut and try the exposed fuselage to receive the dihedralled wing. Now glue in the wing and replace A-B with more glue and 2 more pins and go on to the tail. Trace and cut out the stabilizer from 1/16" quarter grain stock and sand to a streamlined airfoil. On the drawing is shown the movable elevator which you may put in if you wish. Construct the sub-rudder the same way and glue these units on, checking for alignment.

The rocket barrel is made of 1/4" I.D. copper tubing, closed and rounded at the front end with the head of a thumbtack and a lot of solder. Don't forget the beveled rear end. Attach the barrel to the fuselage with 2 bank pins. Chop off their heads and bend to the shape shown; inbed them in the body, using glue freely. When dry bind the barrel to them with fine copper wire and solder. By trial (Turn to page 35)





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## years ago

IN MODEL AIRPLANE NEWS

A FLYING scale model of the Junkers W-33L, Bremen was the feature of the month. You may recall the Bremen as the first airplane to make a successful East to West crossing of the Atlantic Ocean. Hermann Kohl was the pilot, Major Fitzmaurice the co-pilot and Baron von Hunefeld, backer of the flight, acted as passenger-navigator. The flight started at Baldonnel, Ireland on April 12th 1928 and ended in a forced landing at Greenley Island, Labrador on April 13th 1928. During July of the same year a sister ship of the Bremen established the world non-refueling endurance record of 65 hours, 25 minutes.

THE SPEED FAN was provided with a model K-G Twin Speedster. The K-G was constructed of balsa and was covered with tissue. The fuselage sticks were 28" long and the wing measured 20 3/16". Two 8" propellers were used and a total of 70 feet of 3/16th rubber supplied the power. The model was designed by Kenneth Grundewald of New York City and held the official test record of the Associated Aviation Clubs of America. The record (40 mph) was made at an outdoor meet in July 1929 at Jamaica, Long Island, New York. The procedure of timing a speed model during the early days of model building is an interesting item. The present day speed fan is sure to get a kick out of it.

"To hold a high speed contest the judges measure 200 to 300 feet from the starting point and mark a half circle so that the finish line will be an equal distance from the starting point at all angles. Several boys are then sent out to take positions along this finish line to act as check-up men as the little speed planes pass overhead. The timers of these events watch for the drop of a small red flag that is being held aloft in one hand by the different check-up men. This means that the model has reached the finish line."

"That's all there was to timing speed jobs in the old days.

The advisory board was swamped the past month and was forced to answer one question editorially. It concerned the Graf Zeppelin. Many modelers were looking for plans of this airship and countless others wanted the letters D-LZ-127 that appeared on the side of the Graf explained to them. The Board answered that it would endeavor to secure proper plans and would publish them when and if they could be found. The explanation of D-LZ-127 was as follows:

"The D is the international code letter relating to the country of origin, in this case Deutschland (Germany).

"The LZ is an abbreviation of the company (Luftschiffbau Zeppelin).
"The 127 means that the Graf was the

"The 127 means that the Graf was the 127th airship constructed by the company.

VICTORY

#### 'Rocket Bomb'

(Continued from page 33)

method fit rudder in back of the rear strut and glue it up. The tab is made from postcard paper or something like it. A coat of clear dope on one side will keep the turn adjustment. Lastly, cut out the 1/16" aluminum launching rail and glue it into a slot made in the position shown.

Finish the model with about three

coats of clear dope, sandpaper with 10-0 between each coat. Now apply two coats of black or olive dope. Finally, put on one coat of sodium silicate known as "water glass", obtainable at your drug store; this will fireproof the plane. NOTE-Do not paint the rocket tube or struts with any of the above mentioned, leave the metal bare. You may apply insignia if you wish. The launching track consists of a bass strip 1/2" square, 25" long and pointed at its lower end. This is put into the ground like a stake at an angle of from 20 to 45 degrees. From the top end going down 16" is a tight U-shaped aluminum groove 3/16" deep. The launching rail should fit and slide firmly but freely. Put a stop at the lower end of the groove or pinch it in.

Now to fly! The fuel consists of 3 to 4 parts potassium nitrate and one part each of sulphur and charcoal. Saltpeter may be used in place of the P. N. Another is photographic flash powder with sulphur and charcoal. We advise you to experiment with your own powder—perhaps even liquid. The charge should be packed loosely so it will burn rather than explode. A tissue paper plug and a 2" fuse of alcohol-dipped string complete the charge. One more suggestion: 2" firecrackers are extremely effective (if obtainable); just open the fuse end so they will fizz. Be as careful as possible when igniting the fuel—collecting burns is not a good hobby. Adjust the ship for a spiral climb. It will glide fast and should balance at the center of the wing chord. Considering control line flying.
VICTORY Considering its speed, triple scale it for

#### 'Texas Wildcat'

(Continued from page 19)

the formers one by one working from back to front. Add nine strings evenly to top turtle and plank the forward section with 1/16" sheet strips. This is easily done with strips 1/4" wide. Cut out former (3) along with engine beams. Cut in location holes to accommodate engine: this will vary. Cement lower cowl lightly in place along with the top. Add the spinner block. When dry, carve as shown on the plan. Then when finished, separate and hollow out to a 1/4" wall if balsa is used, and 1/8" if pine. Now cement lower cowl back in place securely. This must be done carefully or the engine bearers will get out of line. The top cowl is held in place with a little clip and rub-ber band (if you can get one). The landing gear is bent to shape and bolted in place. The fairings can now be added and cemented in place, after which they should be streamlined.

The wing is now made. If you have some 1/4" sheet balsa you can make a wing similar to a hand launched glider and cut the lower fuselage sides to accommodate it. However, if you have to build up the wing of bass a fine job will result. Cut the required ribs, spars and tips and make the two halves by cementing the gusset to the wing spars and the correct dihedral is obtained. Here the

# HE amphibian =IT'S-HERE!=



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(NOTE: The Platypus is a water and land animal peculiar to Australia where many of our boys are based in the Pacific Campaign for Victory. The Platypus has a bill like a duck. Lays eggs, but suckles its young. A good nick-name for the new Leddy Amphibian Jeep.)

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fuselage sides are cut only to accommodate the leading and trailing edge along with its spar. The wing should be cemented well into the side of the ship. Install the bellcrank along with the pushrod and drill a 1/4" hole to allow the control lines to work freely. The lower section of the fuselage is covered and this completes this part.

The tail surfaces are now cut to shape and streamlined similar to a glider tail section. When finished, cut and cement a dowl as shown, add silk hinges and connect the elevator control horn in place.

Add the ignition to the track and shift to get the ship to balance at bulkhead (D); this can be done by shifting the weight forward and backward.

The prop shown was used on a Comet (.35) and proved to be great, so you can vary your prop to the engine you decide to use. However, if you want the most out of your prop, carve as thin as possible and paint till the weight is brought up. A steel washer can be used as a flywheel.

FLYING: Much can be said here, yet a little common sense goes a long way. When testing a ship, keeping the nose down retains the speed and does not allow the ship to slacken the lines. Another good trick is to use little power and keep the ship close to the ground in case the engine cuts out. So take it easy at first and you will have a honey of a flyer.

VICTORY

#### FIGHTERS! BOMBERS!

See page 58

#### Marauder!

(Continued from page 17)

gun! The weapon was only a Winchester rifle mounted in the nose of a special pusher design but it was the forerunner of the modern fighter plane.

Late in 1914 the Netherlands East Indies sent a representative to Martin to sign contracts for his airplanes and thus become the first foreign government to buy his products. The Dutch standardized on Martin airplanes until their tragic fall to the Japs in 1941.

Martin trainers poured from the Los Angeles factory and in the spring of 1916 Martin was made a member of the War Aviation Board in Washington. While serving on this Board, Martin was approached by the Wrights concerning a merger between the two largest aircraft companies in the nation. With a capital of ten million dollars the Wright-Martin firm was established amidst cries of "giant airplane trusts," etc. One of the agreements Martin insisted on was that his Los Angeles plant remain intact; this wise move preserved his record as an "independent" which has carried through to this day, making him the oldest aircraft manufacturing company in the nation.

manufacturing company in the nation. With three types of trainers, the Model T, R, and S, Martin continued to sell to private buyers and taught them to fly as part of the purchase price. One of his early customers and students was William E. Boeing, a Seattle, Washington lumberman who later founded the famous firm

now bearing his name.

During the maelstrom of decisions and retractions between the U.S., Britain and France, the aircraft production program was soon snarled in a hopeless tumult. It was decided that England and France should build the airplanes and the U.S. build the motors. The Wrights had production facilities for aircraft engines and the Aircraft Production Board decided that Wright-Martin should discontinue the production of airplanes (The Glenn L. Martin Company of California was producing one training plane each work-ing day, a record at the time) and concentrate on the manufacture of engines. This was not a part of Martin's plans. He was an aircraft manufacturer, pure and simple, and he was left with but one choice: dissolve the partnership. With the financial assistance of a few friends he moved his firm to Cleveland, Ohio, and expanded his aircraft design and production facilities. Here the famous Martin Bomber, one of the outstanding planes of the war, was designed and built. Although it was not placed in production in time to see action, it became the Army's standard heavy bomber during the following peacetime decade. The record of the Martin Bomber still

The record of the Martin Bomber still stands as one of the most amazing performers in aviation history. Eager to see his new plane in action in France, Martin worked harder than ever before and some idea of what was accomplished can be gained from the fact that plans for the new plant in Cleveland were begun on January 9, 1918, and on February 18th ground was broken. On May 1st the huge factory was put in operation and on August 17, 1918, the first Martin Bomber made its test flight! Powered by two Liberty 400 hp engines, the MB-2 carried a ton of bombs at a speed of 125 mph, faster than the pursuit planes over the Western Front! It carried four machine suns and a 37 mm Baldwin cannon.

guns and a 37 mm Baldwin cannon.

After two weeks of test flights, Eric
Springer (test pilot), Donald Douglas
(chief engineer) and Glenn L. Martin
(Turn to page 38)

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climbed aboard and flew the giant to McCook Field (now Wright Field Materiel Center) for Army acceptance tests. Capt. "Shorty" Schroeder put the MB-2 through its paces and pronounced it "okay." But Martin hadn't waited—there were already seven of them on the production line at his plant! Larry Bell (production manager) rushed those and dozens more to completion on an order for 50—but November 11, 1918, cut short the punishment that was in store for the enemy.

The entire course of the airplane as a military weapon was altered considerably on July 21, 1921, for on that day was given the final, conclusive argument to the "airplanes can't sink battleships" controversy. And, again, another Martin "first." Those were the days of the immortal "Billy" Mitchell for he had stood before Congress and blasted away with everything he had for a huge Air Power appropriation. But he met snarls and catcalls on every hand. The press joined the argument and the opposing sides of the question grew louder and more volcanic with each passing day.

Finally, Josephus Daniels, Secretary of the Navy and Newton D. Baker, Secretary of War, arranged for the ultimate test of the plane vs. warship controversy: an attack by an actual plane on an actual ship! The test was to be entirely scien-tific and thorough. Four German warships, a submarine (U-117), a destroyer (G-102), a light cruiser (Frankfort) and a battleship (Ostfriesland), were offered for the experiment and on June 21, 1921, three Navy F-5L flying boats knocked off the U-117 with light bombs. Next, General Mitchell led 28 Martin Bombers out over the G-102 and let go with 300 lb. bombs to send the destroyer to the bot-tom in just 19 minutes. Next came the cruiser and on July 18, 1921, a squadron of 18 Martin bombers sent the Frankfort to oblivion.

But the real test was to be the armor plate of the battleship. On July 20, 1921, the Navy F-5L's, Marine Corps DH-4's and Army Martins dropped 230, 520, and 600 lb. bombs on the Ostfriesland—but she took them without a quiver. Then Billy Mitchell called for his experimental 2,000 lb. bombs, slung them into 'seven Martins, took off on July 21, 1921, and headed for the battleship. The huge missiles whistled through the air and the following explosions were like nothing that had ever hit a warship. Twenty-one minutes later and the Ostfriesland disappeared to the depths. With Martin Bombers, General Billy Mitchell had proved "airplanes can sink battleships" and this prophetic experience was to bear fruit less than a quarter-century later.

For the next 10 years Martin concentrated on the design and development of a series of bombers for the Navy. But in 1931 another Martin "first" rocked the Army bomber world when the Flying Whale appeared, first of the modern high speed bombardment airplanes. The first of this startlingly new type, the Martin XB-907, was the initial large all-metal airplane with a speed of 200 miles per hour! It became evident to Martin that this high speed would make the handling of a machine gun a difficult proposition so he devised the first fully enclosed bomber gun turret which was installed on the YB-10 of which 13 were produced. Production orders followed for the B-10A and the B-10B and an improved model, the YB-12 and B-12A, were built in quantity.

(Turn to page 40)

### THE POST-WAR PERKY



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or is a very fire motor.
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near year we have been
having many model airplane contests and I have
plane contests and I have
ny Super G Shark powtor. W G.H.Q. motor has
tor. W G.H.Q. motor has
service.

J. N., BRECKEN R 10 6 E.

HINHA: Am having good
results from my motor.
E. D., PLESSANT HILL,
MO.: Berelved my G.H.L.,
Motor in fine shape. Very
veil satisfied, and think
it is a swell little motor,
runs fine. A friend of
wanted me to order it for
him.

E. S. J., TALLAMASSEE, FLA.; I have a G.H.Q engine that I purchased from your company a short while ago and it operates satisfactorily.

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B., GLEN ALLEN, VA.: tarted it with only a turns of the propeller was very pleased with

C. C. N., AMARILLO, TEM.: Before my induc-tion into the Army I built a few models which incor-porated your G.H.Q. mo-tor. I found it satisfac-tory and put a great deal of faith into it because of its dependability.

D. B. B. Jan. LitchField.
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A twin engine mid-wing monoplane, the Martin Bomber set the style for the modern bomber with stressed skin wing, retractable landing gear, full engine cowling, fully enclosed crew positions, controllable pitch propellers and fully enclosed bomb load with remotely operated bomb doors. For this outstanding airplane design achievement, Glenn L. Martin received the Collier Trophy in 1933, aviation's highest award.

So popular was the design, planes of the type were sold to Argentina, Netherlands East Indies, Turkey, Siam, China and Russia. Outstanding testimony to the advanced design of the Martin Bomber is the use of twelve Model 139's by the Dutch against the Japanese invaders in 1942. The gallant Dutch fliers sank 26 Japanese ships including a battleship and accounted for thousands of Jap troops aboard these vessels. They were not shot down in combat but were destroyed, ironically, on the ground when the Japs found their well hidden airfield.

Continuing their progressive research on the design of high speed twin engine bombers the Martin firm produced the Maryland and sent it into action with the French Air Force and thence into the North African campaign with General Montgomery's forces. The Royal Air Force also received the Baltimore, improved version; but it was the new B-26 project that demanded the utmost concentration of the Martin engineering staff. The imminence of America's participation in the war and the obviously far advanced design of the B-26 gave an impetus to the project that extracted the maximum energy from each engineer. Their accom-plishment, known to the Allies as the Marauder and known by the enemy as a hundred different surprise shouts, is our Plane on the Cover this month. Here is a brief description of the Martin B-26 Marauder:

#### Structure

WING-The wing is built in only two major assemblies with each panel complete, a system differing widely from other airplanes. Each panel is composed of two heavy spars connected by main ribs and spanwise stiffeners, the whole, covered with flush riveted Alclad, comprising a heavy box beam. Leading and trailing edges are separate assemblies in the manufacturing stage as are the tip sections and the engine nacelles. These assemblies, other than the tips, are not removable in service; however the wing leading edge is hinged for ease of access to control cables. Each spar carries two heavy fittings for attachment to the fuselage wing section which carries through the fuselage main monocoque section and is an integral part thereof. Ailerons and landing flaps are of all metal construction, the ailerons fabric covered. Flap seg-ments are mounted on either side of the engine nacelle beavertail.

FUSELAGE-The fuselage is built in six sub assemblies, the plastic nose and tail cones, the forward fuselage section housing the control crew, the main section comprising the wing fuselage section and the bomb bays, the aft fuselage section housing the upper turret and waist gunners and the tail gunners fuselage section. Each section is of monocoque construction, the whole assembled by heavy bolts through attach angles. There are bulkheads aft of the bombardier, between the pilot and radio operator-navigators compartment, on either end of the bomb bay and at the rudder post. All compartments are completely accessible by all crew members while in flight

through hatches and crawlways.

EMPENNAGE—The Martin Marauder is distinguished by its dihedral horizontal tail surfaces, an innovation at its first appearance. Stabilizers are full cantilever all metal construction, the rudder and elevators fabric covered for ease of operation. Balanced surfaces are provided through internally attached weights in the leading edges of the surfaces.

LANDING GEAR—The tricycle land-

LANDING GEAR—The tricycle landing gear is fully retractable with clam shell doors completely sealing the wheel wells upon retraction. The main wheels are unique in that they retract forward, thereby permitting the drag of the slipstream to assist them in extension in the event of hydraulic system failure. Single leg hydraulic struts are used and dual brake assemblies are provided on the main gear only.

#### Power Plant

ENGINE—The Martin Marauder is powered by two Pratt & Whitney Double Wasp R-2800-SIA4G engines developing 2,000 horsepower for takeoff and equipped with a two speed gear driven supercharger. Each engine drives a fourbladed full feathering constant speed Curtiss Electric propeller with a diameter of 13'6". Blade cuffs provide additional engine cooling on the ground and during full throttle climbs.

FUEL SYSTEM—The Marauder was the first American warplane to go into action with self-sealing fuel tanks, the patented Mareng fuel cells having been designed by the Martin Engineering Department as a result of reports received from the war fronts. Capable of effectively sealing holes up to .50 caliber fire, it has been one of the outstanding "firsts" of the Martin organization. These cells are carried within the wing main section between the spars and consists of a large number of small cells, thereby preventing loss of fuel through damage to a single cell.

OIL SYSTEM—The oil is carried within each engine nacelle, the oil coolers being mounted just aft of the air intake at the bottom of each engine cowling.

#### Armament

Armament of the Marauder varies with different models, but in the latest series now in action a total of twelve .50 caliber machine guns is carried. In the nose is a flexible .50 mounted in a special socket operated by the bombardier. On the lower right side of the nose cone is a fixed .50 aimed and fired by the pilot. Four "package" .50's are mounted in pairs on either side of the fuselage just below the pilot's compartment and these, too, are aimed and fired by the pilot.

The upper hemisphere is covered by the famous Martin Model 250 CE Deck Turret containing two .50 caliber machine guns. Two .50 caliber waist guns are operated through sliding hatches on the lower aft side of the fuselage.

The tail turret is power operated and mounts two .50 caliber machine guns. This mighty array of armament is a result of Martin's desire at the outset of design to provide a medium bomber fully capable of operating without fighter escort. This policy has resulted in one of the few planes fully and adequately capable of "taking care of itself" on lone forays into enemy held territory.

The bomb load depends largely on the fuel and equipment load but it provides a maximum capacity of 4000 lbs of bombs. The normal load for extended 'range operations is about 2000 lbs. and equip(Turn to page 42)



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ment is provided for mounting any desired arrangement of bombs, from twenty-six 100 lb. bombs (see illustration, page 15) to two 1000 lb. bombs. Aiming and release is handled by the bombardier in the extreme nose of the airplane.

Provisions for mounting a torpedo are made on both the standard Army version and special Navy versions,

#### Equipment

An inspection of the interior of a Marauder reveals an astonishing array of fighting equipment in so small a fuselage. The radio equipment is complete in every detail and is mounted on the floor and on shelves on the right side of the fuselage in the radio operator's compartment. Complete navigation equipment is carried on the opposite side of the same compartment presided over by the navigator. Ammunition for the various movable guns is carried in ingeniously designed containers with the tail gunner being provided with a remote ammunition feed.

Provisions are made for mounting an aerial camera in the belly of the ship between the two waist gunner stations. A seven-man life raft is carried with complete emergency rations and rescue signaling equipment.

Armor plate is generously provided for all crew members with the exception of the bombardier, a location which is impractical to protect. Of special interest is the tail gunner's protection provided by the location of his seat forward of a special armor plated bulkhead protecting him from fire from the rear. The pilot and copilot are protected from the side by externally mounted curved plates.

Large air intakes atop the engine cowling contain carburetor air filters permitting operation in desert and sandy areas.

#### Accommodations

A total of seven men comprise the flight crew of a Marauder as follows: the bombardier, located in the extreme nose of the ship; the pilot and co-pilot, located side by side in the flight control compartment; the radio operator and navigator, seated side by side in the com-partment immediately aft of the pilots quarters and forward of the bomb bay: the engineer, who performs repairs and emergency services on the airplane equipment while in flight; and the amorer gunner, who is in charge of all armament and who services the guns while in flight. The last two operate the deck turret, the tail turret and the waist guns as de-manded by the details of the action. The navigator and radio operator also function as gunners when the need arises.

#### Combat History

The combat history of the Marauder type, or a single Marauder bomber for that matter, would fill several volumes and it is only possible to give the more important and interesting sidelights on the Marauder's performance. First of all the type enjoys the distinction of being the first airplane designed during the war to see service in the war, this in-cluding all the warring nations' aircraft. Although the B-26 type was in the design process some time before the outbreak of hostilities, the details of its equipment and arrangement were continually altered from combat reports. It is of interest to note that a contract calling for the production of 1,100 Marauders was signed long before actual construction of the first ship, the contract being awarded on the basis of drawings, specifications and technical data submitted to the Army Air Forces as well as the outstanding reputation of the Glenn L. Martin Company as

a contractor of nearly 30 years' standing with the Army.

The first B-26 was test flown on November 25, 1940, by William K. "Ken" Ebel, Vice President in charge of Engineering and Chief Designer of the plane. This proved the B-26 to be the fastest plane of its type ever designed.

The Marauder first saw action in the South Pacific flying against the Japanese from bases in Port Moresby, New Guinea Following their success in that area and the expanding American theater of operations, Marauders moved to other advanced bases in the Southwest Pacific and continued to run up a remarkable score against the Nips, particularly those models equipped for torpedo carrying and used against Japanese shipping. A Japaruiser is known to have been sunk and a carrier badly damaged by Marauder torpedo attacks!

Following the American landings in North Africa, the Marauders entered the European theater and later began operating from bases in England. Their specialty in Europe has been low-level attacks on specific military targets such as communications, troop concentrations and most particularly against robot bomb launching platforms along the "rocket coast" of Northern France and Belgium.

#### Specifications

The latest Martin Marauder has a span of 71' and is 58' 2" long. It stands 21' 6" high and has a wing area of 623.5 square feet. The landing gear tread is 22' and the Marauder weighs approximately 35,000 lbs. fully loaded. It has a top speed of well over 300 mph and a service ceiling of 20,000 feet. With a full bomb load its tactical radius of action is some 350 miles

tical radius of action is some 350 miles. We have heard a great deal of adverse comment about the handling character-istics of the Marauder which have centered about its high landing and takeoff speed. There is a very simple explanation for this, although its magnitude has been exaggerated out of proportion by an over-zealous and non-technical press. In order to gain speed, the wing span and area of an airplane is often reduced, thereby eliminating a considerable portion of drag-producing surface. This results in increased wing loading which makes for high speed in flight but increased landing and takeoff speed. The Marauders wing loading of more than 56 lbs. per square foot is the highest of any airplane with a weight of 171/2 tons or less and greatly exceeds that of the fastest fighter planes. This wing loading results in its high speed being far faster than any airplane of its weight or near it. Such level flight performance cannot be gained without an appropriate loss in something else, in this case landing speed.

With adequate control at low speeds and a tricycle landing gear, a high landing speed is of no concern to an experienced pilot. A Marauder in the hands of such a pilot is one of the deadliest planes, and safest planes, in action. In the hands of an inexperienced pilot (newly assigned trainees, etc.), it can be a serious prob-

lem, as can any plane.

But it's in the air that a plane makes its mark, and it's in the air that the Marauder is one of the most feared planes in action. Now battling the enemy on every war front, the Martin Marauder is carrying the attack to the enemy without letup, and so it will until the final gun implacement is destroyed and the last enemy fighter sent to smoking ruins. The Marauder will continue its marauding until the final bell, and its contribution to the ringing of that bell will be a major one ... rest assured of that!

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#### Off the Line

(Continued from page 2)

closed and just listen while you got a let of ideas off your chest. Well, here's your listener, a fellow who will just sit and drink it all in.

And you know, there is one more poin about this listener: he pays you to talk to him. Yep! Imagine getting paid for just sitting around gabbing about models Boy, how long has this been going on? Sixteen years, chum, and where have you been i

So to get back to the point of how much knowledge is required to design something for Model Airplane News: the exact amount of knowledge you have! No more and no less than you have!

Sure, I can understand how you feel about telling "me" about model building. Just like that young modeler who came into the office did. Well, for every advanced, experienced model builder reading the magazine there are over a thousand who aren't. And it's those thousand modelers who constitute the "me" that wants to be told. So here's your listener, fellows, now how about it?

-The Editor

#### 'Gulliver'

(Continued from page 27)

medium 1/4" square balsa, sanded round, except on the portions that are under the wing and stabilizer, which are left flat for firm attachment. Sand well to keep down weight. Glue a small metal thrust bearing onto the nose and bind firmly with thread, trying to keep the prop shaft as close to the boom as possible to keep the prop out of water. Add rear hook 13" back and bind firmly.

The props on the original were the large 3-bladed type; however, experi-menting showed that shorter 4-bladed props kept out of the water better and produced a longer motor run. Either type with the spinner is extremely realistic, adding to the model's scale appear-

First make the spinners from medium scrap balsa about 3/4" cube. Then from hard 1/16" sheet make eight blades 3° long, using blade pattern on plans. Sand and steam to cambered airfoil section and glue in slot cut about 1/4" in spinner. Be sure the blades are in straight and lined up properly with about 20° pitch. Fillet with plenty of glue and dope whole prop several times, sanding smooth. If this is too much trouble and you're not particular about looks, run down to the local hobby shop, grab four 6" props, glue each pair crosswise and you're done. However. be sure to make one righthanded and one left-handed prop so that the tips of each prop turn toward the hull under power. All that remains is to give your little glamor girl at least three coats of dope, five on the hull, add color trim, hold the booms under the wings with rubber bands (if you still possess any such "untouchables") and the stabilizer on the booms likewise, putting 3 (4°) negative incidence under the trailing edge of the stabilizer, add two well lubed 13" loops of 3/16" rubber, and she's ready to fly!

Adjust Gulliver to balance about 2" from trailing edge of the wing. Change incidence as desired until a flat, fast glide is obtained (over long grass, please). Better try a few power flights on land before going swimming. Don't worry, she can really take it. I flew the original on everything from a tennis court to a stone hallway with no ill effects excepting a few white hairs! The climb ought

to be very steep and fast if you made those props right. To make the winding those props right. To make the winding easier, wind one motor fully, stick a pin in the nose to provent the prop from going around, and wind the other.

Now try it on the water. Making sure adjustments are correct for a steep climb

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and flat glide, wind the motors part way, set it on the water and release the props at the same time without tipping it at all. Gulliver should taxi straight and smooth with the bow a little raised; however, a small sea-rudder may be needed to keep it straight. With a little experi-menting you will be able to make it take off effortlessly under full power; I did it on the first try!

Volumes could be written about flying hydros, but the best way to learn is to build Gulliver and find out for yourself. I'm sure you will be more than delighted with this little ship, both because of its striking appearance and splendid flying

ability. Happy landings!

#### Noorduyn Norseman

(Continued from page 9)

CONSTRUCTION DRAWINGS-First make a scale by transferring the scale on Plate 2 to a piece of stiff white draw-ing paper; this is done by laying the printed sheet face down onto the drawing paper and rubbing through the back of Plate 2 until enough printing ink has been transferred for easy legibility.

When laying out the full size fuselage

and wing, dimensions can be read directly from the scale. Accuracy is of first importance if full size formers on Plate

4 are to fit properly in place.

The fuselage can be drawn on brown wrapping paper but the half-wing should be laid out on tracing paper; this makes it unnecessary to draw up the full wing as the tracing paper can be turned face down and construction of port half of wing can be done on the back of drawing.

Note that the wing plan on Plate 3 has been broken, use the dimensions given as a basis for the drawing. Take into consideration the type of ship being built and whether or not ailerons are needed. If wing has no movable control surfaces they can be simulated by strips of black

paper on final covering.

A template from the full size wing rib on Plate 2 should be made of stiff drawing paper by the same transfer method as used for the scale. Another template of stabilizer ribs can be made by en-larging the section, also on Plate 2, to

ruse the size shown.

FUSELAGE—The basic frame of 1/4" square hard balsa consists of the two identical sides built one on top of the other directly over the construction drawing. When the sides are thoroughly dry they are split apart, attached to 6-3/8" diameter firewall and former No. 11 before cross members and bracing are added. Make sure structure is square before putting away to dry.

Metor mounts of either metal or wood should be affixed at this point while the frame is sufficiently open to allow easy access to bolts or screws. Build motor mounts to suit individual motor but take care to keep thrust line in its correct

location

The tailwheel sub-assembly and the soft balsa fairing at the bottom of fuselage from former No. 11 to rudder post are next firmly cemented in place.

The undercarriage sub-assembly shown on Plate 3 is more in the interest of authenticity than simplicity. A very serv-iceable alternative could be made from (Turn to page 48)





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1/8" diameter steel wire bent to a shape and size which would allow for stiff paper fairings to simulate the original. As a matter of interest, the undercarriage shown (less wheels) supported a weight of 165 pounds without sign of stress. It was made of rock-hard material joined with plastic resin glue.

The undercarriage should now be firmly cemented, bound and wisely braced to the fuselage after which the full size formers on Plate 4 are cut out of 1/16" hard sheet and cemented into their exact

and proper location.

The control mechanism, if wanted, should be installed before the 3/16" x 3/32" hard stringers are cemented in. When putting in stringers make certain they follow clean sweeps along the fuselage, nothing looks worse on a finished ship than wavy inaccurate contours.

The fuselage is completed (except for the empennage) by adding the 6" diaplywood ring, applying soft 3/32" sheet as shown, finishing the wing platform and fairing the landing gear with silk.

The sheeted areas must be filled with any good pyroxilin base filler and the entire fuselage prepared for a smooth coving job by complete, careful sanding. EMPENNAGE—The stabilizer and ele-

vator are built over the construction drawing if the elevator is movable; it should be sanded and hinged to the stabilizer with control bell crank in place before the assembly is permanently cemented to the fuselage.

Fin and rudder are built up from 1/4' hard sheet outline with 1/16" x 1/2" hard balsa ribs. The unit is sanded to streamline shape after assembly. The movable rudder was included on the drawing for realism and perhaps with an idea of ultimate "pre-selector" type control. As soon as fin assembly is complete

it is cemented in place and the fuselage

is ready for covering.
WING—The only features which might take the wing out of the ordinary simple and thoroughly conventional class are the possible movable ailerons, and that the all-too-infrequent practice of notching the ribs into the trailing edge is most definitely recommended—a wing so made is certainly very much stronger and the tendency to warp is almost entirely eliminated.

It is suggested that the wing be constructed in the following manner. First, accurately mark off the two trailing edges at the ribs, then notch both at once with two hacksaw blades bolted together. Insert ribs and then, before the cement is dry, lay in and glue the spars so that they form absolutely straight lines; then cut and fit the pieces of 1/16" sheet between ribs. Set in leading edge spar and allow structure to dry over night before building up leading edge of soft 1/16" sheet and letting it set while wing is pinned down for about 12 hours. The ailerons are made in much the same manner as the wing. It should be added, however, that if the ailerons are not animated the top 3/16" square spar just ahead of the aileron may be omitted.

The wing centre section is made up next: lay out the side elevation of the wing root by scaling up the view on Plate 2. Note that in plan view it is bent inwards at the leading edge to match wing platform; this is accomplished by first cutting halfway through the section, cracking and applying a liberal coat of cement over the crease.

Center section is completed by temporarily attaching it to the fuselage, adding former T-4 and the necessary stringers. Remove when set and make a (Turn to page 50)



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removable hatch from 1/6" hard balsa sanded to conform with fuselage top. This removable hatch serves the dual purpose of providing access to the interior and supporting the universal joint of the control mechanism. When control mechanism is used, the center section must be keyed to the wing platform to eliminate any possibility of the wing getting the smallest fraction out of

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When all wing parts are dry put in the dihedral and apply gussets, check wing for alignment and allow cement

to set over night.

Please note that the 5" dihedral indicated (always measured from highest point of upper camber) is the minimum required for a free flight model without automatic control, 6" would be safer while 4" is more to scale and quite adequate when the control mechanism is

MISCELLANEOUS-Wing struts are made of hard balsa or bass to the di-mensions and sections shown on Plate 4. The pair are identical except for the fairings at the wing which, of course, slope at opposite angles for port and

starboard wing panels.

COWL—Cowl is best made up of dope and paper laminations over a turned wood form, 6 to 8 layers being sufficient to assure a strong job. After the laminations have dried for eight or more hours sand and fill with pyroxilin base filler (automobile glazing putty) when filler is dry, sand to a glass-smooth surface. Allow at least one whole week before removing cowl from form.

Pitot tube (not shown) is in a most dangerous location for a flying model and its inclusion transforms this ship into a potential lethal hazard. It is located on the leading edge of the port wing at a point in line with the wing strut fairings, it projects out in a straight line for 9-34" beyond the leading edge and its extreme tip has the conventional and its extreme tip has the conventional appearance of a barbed spear—a very ugly thing to be accidentally impaled by and please don't just say it's highly improbable that it will ever happen better leave it off!

COVERING-The original was covered with silk span, given two coats of clear dope followed by five coats of pigmented dope. The ship was finished in the bright yellow of an R.C.A.F. training plane with India ink numerals. As a UC-64A the ship would be painted silver with the standard U.S. Army identification markings.

NOTES ON FLYING—Assuming that a straight scale job has been built, the methods of test flying are fairly standard

for this type of model.

The procedure should not be hurried. First balance the ship by moving ignition components until c.g. is located approximately on the thrust line 50% back of leading edge, then try a test glide from a kneeling position. The glide should appear decidedly nose down, ex-plained by the fact that if thrust line is horizontal the stabilizer is just a little below the center section of the wing. Smooth out the glide until it is perfect when launched from a standing position.

Next comes the power glide; start mo-tor, set it at its lowest running speed and try another glide. This time the ship should lengthen its glide, land gently on front wheels and roll along the ground until it comes to a stop with prop still turning over. Examine the power glide critically and study the attitude of the plane in flight; it should be exactly the same as a power-off glide. If it is not, adjustment has to be made

to the ship's angle of attack (usually called up or down thrust) until perfection is once again reached.

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tion is once again reached.

Open up a little more, then study, criticize and adjust again, but slowly! Take plenty of time and increase revolutions one by one rather than by several hundred. Keep yourself in check, and when the time finally arrives to "give her the gun" the ship will be as clean and unscarred as the moment she came off the bench; she will take everything the motor gives without a falter.

Remember, this is definitely not a contest ship therefore keep the turns wide and the climb long and gradual. If sport flying is to be enjoyed to its utmost let the motor run for several minutes so that there is really time to thrill at the sight of a truly realistic ship turning in a truly realistic flight. Use common sense when doing this long duration flying, don't let the motor scream out its maximum revolutions. The model could climb out of sight in four minutes unless the power is just enough to keep the ship a shade over the minimum speed for level flight.

THE AUTO-CONTROL—The diagrammatic sketch on Plate 1 is self-explanatory and no other discourse on the principle seems necessary.

The materials suggested are standard

The materials suggested are standard cycle spokes with nipples and sundry pieces of scrap brass and aluminum. The battery box which serves as the pendulum bob will have to be made from wood or metal as boxes for the large size cells do not appear to be made commercially. Pad the entire box with natural or rubber sponge. The leads from the terminals should be long enough to allow free movement of the pendulum and the padding will prevent damage to the fuselege in rough landings.

the fuselage in rough landings. The whole secret of successful operation lies in the friction dampers. These dampers acting on items 3 and 5 (Plate 1) are adjustable by increasing or decreasing spring compression through turning the spoke nipples until desired dampening effect results. Friction should be such that when ship is displaced from its normal axis the control surfaces will move slowly and without jerking. Smooth action is obtained from applying to the fibre washers a coat of wax by dipping them in melted paraffin. allowing them to cool and dipping again until a coat about 1/32" thick covers each washer.

There should be no play in any of the joints or knuckles; play causes fluttering control surfaces and this usually ends in a crash. A good scheme to follow in making "eyes" in the control rods is to form them around a 1/16" diamandrel (a nail), fill with solder, file flat and drill out with the correct drill. This gives the effect of a bushing with required snug fit, excellent bearing properties and little friction.

When hooking up the control rods to the pendulum the ship must be jigged up so that both horizontal and lateral axes are level. Control surfaces are then locked by turning spoke nipples until dampers are tight and immovable. Being careful not to displace pendulum from neutral, connect control rods with spoke nipples to items 2 and 4, lubricate all couplings and bearings with vaseline

or axle grease.
FLYING WITH AUTO CONTROL—
Lock pendulum and all controls in neutral then proceed with test flying as before mentioned, only now there exists additional trimming facilities through the control surfaces. If, however, either allerons or elevator are moved slightly out of neutral, adjustments must be made

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to spoke nipples at items 2 and 4 a that pendulum assumes its natural position once more.

Unlock controls, check dampers and start test flying procedure again; grad. ually working up from dead slow to full power and making exact minor adjust. ments to dampers etc. as trials are carried out.

CONCLUDING NOTES-The autocontrol is not foolproof; it requires critical adjustment and has one great dis-advantage. If the ship is in a tight circle the pendulum is displaced by centrifugal force and acts on the ailerons in exactly the opposite way so that the ship is still further displaced about the lateral axis. Therefore, never allow the plane to circle on a radius of less than a safe 200 feet.

The ideal motor to use would be a small class "C" or large "B", the latter being preferable with auto-control.

Sport flying is always more enjoyable if the ship is underpowered. The flight is more realistic, it is easier on the ship and on the owner's nerves.

The most important factor to be considered with high power loading is pro-peller design and the reader would do well to become acquainted with the problems involved. An excellent book on model areodynamics (frequently ad-vertised in M.A.N.) carries a whole chap-

ter on this fascinating topic.
The author would like to thank all the model builders who have written to him for plans of this ship and hopes that these pages will answer their needs

VICTORY

#### Testing

(Continued from page 25)

Better? Good! Now we are ready for the real power flights.

Start increasing the power more. Whoops, almost spun in that time. Loosen the motor screws and cock it a little in the opposite direction from the spin. Now try it. That's better. How about that sweeping dive on that first turn? The ship could probably get fifty feet higher if we eliminated that. Try decreasing the tail incidence. Boy, none of that dive now. Whoa, wait a minute, look at that glide.

Looks like it is practically diving. Now for another cure. Put a small block, say 1/32", under the side of the stabilizer that is on the inside of the turn. That's a lot better. Now try full power and then watch her tick. That ship is really going places!

The above sounds simple, doesn't it? Sounds like it could be done in no time at all. But it isn't as simple as it sounds. It may take as long as two weeks to completely test the model. In fact, it seems that we can never say it is all tested and really mean it.

Below are listed some of the many types of adjustments you might have to do to cure the listed troubles:

#### STALL IN GLIDE

1. Move wing back.

Decrease incidence of tail or wing.

Move c.g. forward.

Turn rudder so as to make model circle tighter.

#### STALL OR LOOP UNDER POWER BUT NOT IN GLIDE

1. Put down-thrust in motor.

2. Offset motor to make it pull in a

(Turn to page 54)



MODEL AIRPLANE NEWS . November, 1944

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- 1. Offset motor in opposite direction.
- 2. Adjust rudder to cure and/or move against circle.

#### GOOD POWER FLIGHT BUT POOR GLIDE

- 1. Dive in glide.
  - a) Increase incidence and down thrust and/or side thrust.
  - b) Move c.g. back.
- 2. Glide straight but good circle under power
  - a) Cock stabilizer at angle to correct lineup; raising the right tip causes it to circle to the right and vice versa.
  - b) If model flies to right: offset motor to left slightly and move rudder for right circle.
  - c) If model flies to left: offset motor to right slightly and move rudder for more left cir-

#### VICTORY

#### Air Ways

(Continued from page 29)

suppose, include the resolution that Whereas model airplane building is essential to the education of America's aviation minded youth, and, whereas the model motor is an essential part of model airplane construction, it is therefore resolved that those formerly engaged in the manufacture of model airplane motors be permitted to return to such manufacture at the earliest practical moment."

With this resolution the W.P.B. representatives would terminate and recapitulate the various contracts held by a certain model manufacturer. This would mean simply that those parts already produced, material on hand and work already done, would be paid for. The remainder of each contract would be cancelled and all "war work" removed from the manufacturers' premises. He would then be awarded the proper certification permitting him to return to model engine building, and in some 60 to 90 days you and I would be able to walk into our model dealer or hobby shop and purchase a new engine.

Of course, this is an extreme case, and one highly idealized since it would be rather difficult to wipe the slate clean at one stroke. Normally we would find that, say, 20 of these contracts were very vital war material badly needed for the Pacific campaigns. In this case a "partial reconversion" might be permissible with those men and machines, formerly utilized on the 30 "terminated" contracts, and then assigned to motor manufacture. This is what the manufacturers are trying to accomplish.

However, it is the obligation and re-sponsibility of the Army Service Forces to plan on the basis of a long, difficult and attrite war so that if this war proves long, difficult and attrite, we will be prepared for it. Obviously, the Army production agencies are going to oppose any cuts in war production, particularly on items of a newly developed nature.

This, then, may be considered a report to the modeler on the status of the model manufacturers. We know it is not clear, that no sharp lines of procedure have been established. You may walk into your dealer and buy a brand new motor today or you may have to wait as long as two

(Turn to page 56)

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years. These things you know but perhaps now you will know why.

Picture No. 1 this month comes from World War I fan Pvt. Charles M. Keegan, 16100 Lucille Ave., Cleveland, Ohio, who is now stationed in the South Pacific, "Chuck" is 19 years old and these models were made prior to his entry into service. The experts may have already spotted (left to right) an S.E.-5 Fokker D-7, D.H.-4, Sopwith Camel and a Fokker D-8. This is certainly one of the finest collections of authentic detailed solid scale models of the best known World War I airplanes in existence. Congratulations, Charles, and let us hear from you more often!

Picture No. 2 made us green with envy and we wish we could jump in right beside Ken Flaglor. About his model, Ken writes: "Here is a picture of my Taylor-craft which is a U-Control model and flies as well as any I have seen to date. This is a large model for U-control, but I like my models big enough to look like something. The size does not hinder the performance in any way. It has a span of 69", weighs 4-1/2 lbs. and has a top speed of 64 miles per hour. The model is an exact scale, as I can't stand those spindizzy motors with wings on the end of a line. I have made over 160 flights with this job and she flies just as well as ever. I have won many prizes and placed in every meet I entered. Aerobatics and high points are my specialty. I have done as many as 27 loops in one flight and can slow her up to 9 loops in succession. Another specialty of mine is to fly the Taylorcraft along about 3" from the ground, bounce the wheels and haul off into a vertical climb.

"Flying with floats is very thrilling and much more fun than with wheels. I fly it in the Rand Park pool in Des Plaines, Illinois, on a 50' line. Boy, the takeoffs and landings are really something to see. I haven't had any trouble at all on the water and have about 40 flights with floats. The takeoff run is a half lap on water and slightly less on land. An interesting fact to note is that the floats cut down top speed only about 4 miles per hour. This plane flies quite fast for one of its size, but lands very slowly. I have flown it in winds where speed jobs were grounded . . . all proving the exceptional stability of the model. This is my last plane for the duration as I am now in the Army.

"I have done some experimenting with flying wing U-Control models with favorable results, but my experiments with have to wait until after the war. I have also taken pictures with a Brownie camera mounted on the struts of my Taylorcraft which is a lot of fun. The camera is either aimed forward or through the tail and a third line is used to snap the pictures while the plane is in the desired flight attitude. It is surprising how clearly the pictures turn out."

One of the truly outstanding U-Control models we have seen is shown in Picture No. 3, a Curtiss SB2C-1 Helldiver, the very fine work of William Noonan, 4546 58th St., San Diego 5, Calif. He says: "This Helldiver is powered by an Ohlsson single "23" and has a 32" span. I started drawing the plans before much information was available. I got most of my information from photos and from seeing the actual ship at the North Island Naval Air Station where I am a civilian employee. Under the front cockpit wheel I have inscribed the name of my best friend, A/C H. L. Patlen, now training at (Turn to page 58)

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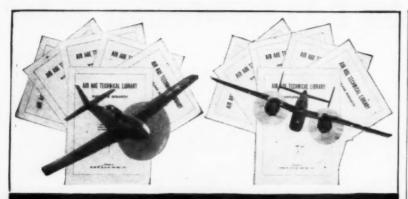
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Corpus Christi, Texas. Under the rea cockpit wheel is my own name. Many the planes seen on North Island are deco rated in this fashion, besides having the

number of bombing missions, Japaknocked down, etc., to their credit.
"The fuselage of the model is planked and the wings have 1/16" sheet leading the sheet edge stiffener. For ease of maintenance the controls are installed outside the fuselage. Although this detracts from the plane's appearance somewhat, it more than makes up for it in ease of repair an adjustment. When Cadet Patlen return we will start flight tests.

Picture No. 4 comes from Dr. Arthu Johnson of 934½ Leith St., Flint, Mich-igan, and shows his Hawker Typhon control job, built entirely of bass wood. It is powered by a Rogers "29" and painted green camouflage on top, and white, black and blue on the bottom. Certainly a nice job, Art, and a particularly excellent photograph.

Picture No. 5 is a model Mercury built by W. F. Russell, 9 Brenner St., Newark N. J.; he and his son Fred enjoy many hours together flying it. One might won-der whether Fred flies the plane or the plane flies Fred, but at any rate he has a firm grip on that propeller and looks

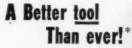
like he means business.
Wendell Romine of Harvey, Illinois, is another modeler who believes in the application of detail scale model building to plication of detail scale indeed to control line flying, and Picture No. 6 control line flying shows what he means when he says: "A model can look like a big plane and still fly like one." This Grumman F4F Wilden has a 37-1/2" wing span and took just five weeks of spare time to construct. Wendell believes that U-Control scale jobs present no drawback to flying qualities and he says: "Although this Wildcat is somewhat slower than the speed jobs it is more maneuverable and has much greater lifting qualities." (Al. G. Davis Photo.)

Air Ways contains "news of model plane experimenters from all parts of the world," and just to prove that we mean it Picture No. 7 comes from the other side of the world and shows the very fine Hawker Hurricane built by D. Schone-gevel of One Barkly Road, Sea Point, Cape Town, South Africa who writes: "Enclosed is a photograph of my model Hawker Hurricane designed by Earl Stahl in the September 1941 issue of MODEL AIRPLANE NEWS. Instead of making it a flying model, I fashioned it up a bit by adding camouflage, cannon, scale propeller, markings, etc. It took me about a month to complete. Model building is practically at a stand-still in South Africa at present on account of the shortage of balsa wood. Supplies of kits from the U.S.A. are also very low. What is more, much flying space has been taken over by the Defense Department. Before the war model building and flying was very popular here and it will be still more popular after the war. I am 19 years old and hope to become a student pilot in the South African Air Force by the time you receive this letter. The training will take 18 months and after that I hope to join the rest of our boys wherever they might be. Our Air Force is at present operating in Italy, side-by-side with the U.S. AAF and the RAF. I'd like to meet your boys, they are doing a grand job and your planes are unbeatable." This is rare praise from an Englishman, but we are glad that you agree with the 130,000,000 Americans.

Picture No. 8 shows the fine work of Ormand Eckley of 1041 Comox St., Vancouver, B.C., who tells us: "The model on the left is a built up non-flying scale

(Turn to page 60)





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model of the DeHavilland Tiger Moth and on the right is a flying scale mode of the Fieseler Storch which recently placed second in its class at an outdoor competition. The Tiger Moth took in months of my spare time to build and it features a full set of dual controls in each cockpit. I painted it in the official RCAF colors for training planes-all yellow with a black cowling and undercarriage.

"The Fieseler Storch has a 22" wing span and an aspect ratio of 8.8 and therefore features an amazing rate of climb. It was the smallest power driven aircraft at the last contest. It is colored yellow and features the German pre-war civil markings. I made my own drawings for it from a small spotter's silhouette and several photographs." Certainly a fine pair of models, Ormand, and let us hear from you about any others you may have on hand

North Weymouth 91, Mass., sends in Picture No. 9 of his Douglas A-20A Havoc. It was built from a 1/4" scale kit plus a lot of Bob's own detailed additions. A fine model and a fine photograph.

Picture No. 10 comes from Bernie Nif-enegger who says: "I have always fenegger who says: wanted to send some pictures of my models to Air Ways so here is my latest, a Lockheed P-38 Lightning made from plans appearing in the July 1943 issue of MODEL AIRPLANE NEWS. The wing span is 8" and it is 5-1/2" long. It is finished in olive drab and took a month and a half to complete. The reason I am sending this to you is that I am leaving for the Armed services tomorrow morning and maybe wouldn't find the time later. I can't make models quite as well as some of the other readers but I think this one is okay." And we certainly do too, Bernie, don't let any-body kid you. He adds: "I had a combody kid you. He adds: "I had a commercial photographer take this picture, so don't think I did this good job of photography." Which is a good suggestion to lots of other modelers we hear from each month.

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Certainly no one will deny that Picture No. 11 is an original design. Known as Frost's Folly it is the work of Clinton Frost, 145 23rd Ave. No., St. Petersburg, Florida. Clinton writes: "I tried to make the model as small as possible and still get the motor completely cowled in. The motor is an Ohlsson '23' which makes the plane very fast, but tricky. I am try-ing to remedy this by replacing the biplane arrangement with a single gull wing.

The ship is made of pine and balsa and entirely filled in except for the wings which are covered with paper from the spar aft. The spinner is made in a very novel manner: first I made a mold on a lathe, then I doped and waxed the mold. I stretched undershirt material over the mold and gave the cloth about twenty coats of dope. I then worked the spinner off the mold and installed it." A great deal can be done in the way of plastic forming and fabrication of molded parts in this manner and it's a very good tip

for which we thank you, Clinton.

Picture No. 12 shows 38 year old Sgt.

Marion Gilbert of 2626 McCallia Ave., Knoxville, Tenn., with his prize winning solid model of a Boeing B-17G Flying Fortress. Prior to joining the Army Air Forces, Gilbert operated a wood-working plant in Knoxville. Using his civilian skill he now builds sand tables for target recognition briefings, illuminating plot-ting tables for navigators, storage cases for gas decontamination kits and bread boxes for the mess hall at the pioneer

(Turn to page 62)



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American base at which he is stationed, the combat home of the "Memphis Belle." This Fortress model has a 38" wins This Fortress model has a 38" wing spread, 28" length and is complete with chin turret and enclosed waist windows Built in spare evening hours, Gilbert won first prize at a recent Division hobby show. On the aft fuselage of the model you may notice the call letters "G-KT." which stand for Gilbert, Knoxville, Tennessee

#### News of Modelers

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John Pragnell, 12 Blackmore Avenue, Southall, Middlesex, England, is very much interested in obtaining an airplane model building pen-pal. He is sixteen years old and is interested in modeling in the United States. So here's your chance fellows to catch up with the latest "dope" on model building and flying in England. Why not drop John a line?

#### Club News

An important announcement has just been received from the Academy of Model Aeronautics. Effective September 1st, new gas model records for all classifications may be established under the 1944 rules of the Academy. Previously published rules forbade the establishment of new records "for the duration," but it is felt that changes effective under the 1944 rules constitute good reason for listing performances under them.

The wing loading has been increased to seven ounces per 100 square inches of area, and motor runs extended to twenty seconds. The cross section rule has been reinstated and take-offs are necessary in the 1944 version of the AMA rules. Contest directors have been notified that if record flights exceed ten minutes (as specified by flight limitation rules) timers should continue to time the flights and submit full time for the performance in record applications. At the same time it is stressed that the twenty second rule is not mandatory and motor runs may be shortened at the discretion of the meet director. However, for contest purposes flights of ten minutes or over shall still be recorded as ten minutes. It is believed that this relaxing of the "no record rule" will greatly stimulate model flying throughout the country. Records pre-sented to National Headquarters will be published as soon as accepted by

#### California

The Gas Model Airplane Association of Southern California, Inc. recently voted to change the name of their club to the Los Angeles Aero Modelers, Inc. It is felt the new title better indicates the specific area covered by their activities. and also the fact they are interested in all phases of model airplane construction . . . not just gas models.

A lot of activity has taken place since the change in titles. An indoor microfilm contest was held at a local theater not so long ago. This was the result of their airport being flooded during the rainy season (apologies to the Chamber of Commerce). The more ingenious members occupied their time during this enforced lull in gas modeling by building microfilm models. The highest time for single flight of three determined the First place was taken by Duke winner. Fox with 5 min. 59.2 sec., and as a reward he received a trophy. Allan Pines and Bob Holland tied for second with flights of 5 min. 29 sec. each. Third place went to Bob Holland with a time of 4 min. 45 sec. Next time the rainy season arrives

(Turn to page 64)

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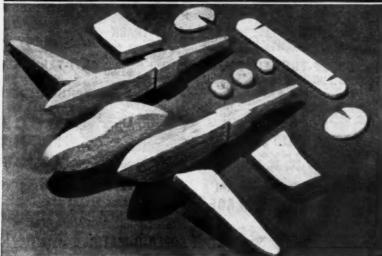
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we suggest you boys build the Gullive model which is complete in this issue.

More recently the Los Angeles Aem Modelers held their 16th Semi-Annual Gas Model Airplane Contest. They drew a crowd of over 100 contestants and 2,000 spectators. Results for the free flight tests were as follows:

12: 15 2/10

Class A: 1. Sam Logan

2. Bob Holland	11:18 6/10
3. Allan Pines	6: 21 4/10
1. Ted Gillett	15:19
2. Frank Butter, Jr.	15:15
3. Bob Ivey	9:48
1: Bob Gunzel	18:40
2. Frank Butler	17:40 4/10
3. Clyde Bracey	12:40
<ol> <li>Richard Reese</li> </ol>	11:10 2/10
2. Dick Hesworth	5:51
3. Allan Robertson	1:34
	1. Ted Gillett 2. Frank Butter, Jr. 3. Bob Ivey 1. Bob Gunzel 2. Frank Butler 3. Clyde Bracey 1. Richard Reese 2. Dick Hesworth

Longest Ted Gillett (time) 10 minutes Flight:

August 6th was about the best day on the calendar for the East Bay Aeroneers. That's when they held their big R.O.G. That's when they held that the day of the state for years. Weather was warm with a little wind until 2 p.m., and a good time was enjoyed by all attendants, hundreds of whom were from nearby Clubs. Contest was strictly 1944 A.M.A. rules, with Don Foote the Contest Director and Jack Dyer, Paul Romak and Les Martin checking every ship entered. Six beautiful trophies were given for First and Second places in all classes and merchandise was donated by Jewelers, Hobby Shop dealers and merchants. The prizes totaled well over \$100.00 and made the "rounds" of all the contestants at least three times. Quite a few dethermalizers were seen in actual operation on the field and numerous Westerns were observed descending with parachutes trailing. The "field" was obtained through the generosity of the Navy who granted permission for its use. The East Bay Aeroneers have asked that thanks be publicly extended to the officers who so generously gave this matter their personal attention and time, realiz-ing the vital importance of "model build-

Results of E.B.A. Gas R.O.G. Contest-5 Minute Limit:

Class A:	1. Jack Dyer	490.5	sec
	2. Al Hovsepian	310	20
	3. Jack Burke	168.3	39
Class B:	1. Donald Minges	370	39
	2. Jack Dyer	350	76
	3. Don Foote	309.25	22
Class C:	1. George Cadwell	875	29
	2. Russ Watkins	760.2	99
	3. Clifford Goodlett	619.25	19

#### Kansas

The Hy-Flyers Club of the YMCA held a Class "B" hand launched Glider contest recently. This was the second contest held by the club since its organization. Prizes amounted to approximately \$15.00. Results were as follows:

First: Carl Unruh Second: Dick Holloway Third: Richard Wallace

New York

At the R.M.F.C. contest held recently, the Prop Spinners again scored high in the winning column. Bill Fletcher leads in points on the Metropolitan Champ trophy, and Warren and Art Horak are tied for the Jasco Award. In Class A. Art placed third and Skeets Reinhardt seventh. Class B, Bill Fletcher placed first, Art Horak third and Skeets seventh. (Turn to page 66)

HODE

#### **NEW NORTH AMERICAN B-25-H**

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4/10

2/10

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A beautiful model of the world's fastest bomber. Set has all parts printed propellers, wheels, insignia, 4 oz. grey paint. 1 oz. black, motor fronts \$4.75 full size scale drawing, and all parts to build. Construction set.

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Skeets seems to have a monopoly on the number seven.

#### New Zealand

The Taranaki Union of Model Flying Clubs recently held three large Model Flying Meets. On one of these occasions the wind conditions were so unfavorable all R.O.G. models were overturned before they could get away. There were also several gas models which, in "kissing the dirt," became write-offs. Results of the first meet were:

GLIDERS—Hand Launched: 1. Cleary. 2. A. Barnes. 3. W. Thompson.

GLIDERS-Towline 100 ft.: 1. Jack Leong. 2. Colin Johnson. 3. L. Ackroyd. GAS MODEL—20 sec. motor run: 1. A. J. Robinson. 2. W. Liddington.

GAS MODEL-Open: 1. A. J. Robin-

Results of the second meet were: GLIDERS-Towline: 1. A. Barnes. 2. Colin Johnson.

SCALE FLYING: 1. A. Barnes. 2. L. Ackrovd.

SOLID SCALE: 1. Jack Leong. 2. L. Ackroyd.

#### Pennsylvania

The Philadelphia Control-Line Club announces they will hold a contest on Sunday, October 22nd at 21st and Parkway. A.M.A. rules will be used. There will be an unrestricted X class for the super speed bugs-this may be any size or shape the flyer desires and any type of power is allowed. However, models must be flown on A.M.A. lines. Something super ultra is expected in the way of trophies and there will be one for each first, second and third place contestant. An open invitation to compete is extended to anyone in the eastern states. As a parting shot, this is Philly's challenge to the westerners . . . how about it?

#### Flash News (Continued from page 6)

Among the many combat reports on this deadly new aerial weapon now pouring in: (From radio broadcast) "A first combat report for the Northrop Black Widow reveals that since D-Day this ship has been largely responsible for 239 Ger-man planes destroyed and 209 more 'probables' as the enemy attempts to bomb our beachheads and supply depots at night." From the 9th Air Force in England: "P-61 Black Widow night fighters have been doing the bulk of the defensive fighting with great success." From MacArthur's Headquarters in Aus-"The Black Widow is now in actralia: tion in the Southwest Pacific theater and has already destroyed Jap planes over

Dutch New Guinea." The first night fighter designed for the purpose in this war, the Black Widow has now tasted action and shouldered its share of the war, with an especial "corner" on the night market

ACCORDING to Aviation News, at least one jet propelled fighter plane produced by another company has exceeded the speed and performance of the Bell P-59 Airgcomet. The same source states that the Airacomet will be used for pilot training in this country.

DOUGLAS has delivered its 5,000th A-20 Havoc type to the Army Air Forces and is now in the process of sextupling its C-54 Skymaster production!

66

AIRPLANE NEWS . November, 1944



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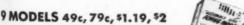
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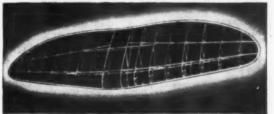
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AMIDST REPEATED RUMORS of production cutbacks, the Republic P. Thunderbolt has just been made the ject of a \$154,639,000 additional order b the Army Air Forces. This brings to total of more than one-half billion dollars worth of unfilled orders for the bolt!

ONE OF THE SURPRISING moves in the aviation executive field is the anouncement that Carl A. Cover, for many years Executive Vice President of Dougle Aircraft Company, has resigned the position and been appointed Manager the Georgia Division of Bell Airmate Corp. Cover learned to fly during the first World War and was Executive Officer to General Billy Mitchell during the famous warship bombing tests (see page 15). Following his transfer to the Re serve, Cover joined Douglas as Chie Test Pilot and has flown every experimental Douglas plane produced for many years. After 30 years' experience as a test pilot and top administrator, Cover was returned to active duty as a Colone was returned to active duty as a colone and assigned to the B-29 production program with the Materiel Command at Wright Field. Now, at 51, Cover self flies his own airplanes. Those who have known and worked with Carl Cover at Douglas and who have known how inseparably a part of that organization he has always been will be astounded at this news. However, we all wish him the very best of luck in his new position. THE GIANT British Avro postwar

airliner has been named the Tudor and resembles the Douglas C-54 in general outline but with liquid-cooled engines installed. Now in the design stage, actual construction will not begin until after

GRUMMAN F7F-1 Tigercat fighter plane was shown to the general public recently for the first time. The twin engined Navy fighter is powered by two Pratt & Whitney R-2800 Double Wan engines and is now in quantity production. It is believed to be slated for use

on the new 45,000 ton CVB giant carriers. MAJOR GENERAL CURTIS E. Le-MAY has been appointed Commanding Officer of the Twentieth Air Force, operators of the Boeing B-29 Superfortes, weapons of global Air Power. General LeMay was formerly C.O. of the 8th Air Force Bomber Command and was succeeded by Major General William E. Kepner. Kepner's former job as head of the 8th Air Force Fighter Command has been assigned to Brigadier General Francis H. Griswold. Brigadier General Orvil A. Anderson was made Deputy Commander for Operations. Kepner and Anderson will be remembered for their record-breaking balloon flight with Albert W. Stevens to an altitude of 60,613 feet in

South Dakota on July 28, 1934.

A CONSOLIDATED Liberator transport recently made the Honolulu-U. S. mainland trek in 8 hours 55 minutes to establish a new record. It was the 55th round trip between the United States and

Australia for the Corsairways giant. CAPTAIN FOREST E. O'BRINE, who with Dale Jackson set the world's refueling endurance record of 647 hours from July 21st to August 17, 1930, died recently while serving as Air Transport Command Senior Service Pilot.

THE 10th AIR FORCE has moved its headquarters from Calcutta to Assam according to its commanding officer, Major General Edward C. Davidson. This places the administrative offices of the 10th much closer to activities in the Burma Theater.

NEW CONSOLIDATED B-32 super-

(Turn to page 70)

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MODEL AIRCRAFT

CAPITOL BUILDING, Dept. M-II 2413-23 Atlantic Ave. Brooklyn 33, N. Y bomber was named the Dominator by

Army Air Forces.
THE ARMY awarded a contract calling for the production of 120 Lockheed C-69 Constellation four engined transports of the type that recently broke the transcontinental record.

BCEING B-29 Superfortress is now the subject of more manufacturing floor space than any other type of airplane in history. In all-out production by the Renton, Washington and Wichita, Kansas plants of Boeing, Glenn L. Martin's giant plants of Boeing, Gleini L. Mattern 2 gind factory in Omaha, Nebraska and the Marietta, Georgia plant of Bell, the monstrous program is rolling along on full schedule with one plant running ahead of delivery dates. In addition, such giant firms as Chrysler, General Motors, Goodyear, Hudson and many others are turning out sub-assemblies for the main assembly plants. This news indicates a growing force of the mighty bombers pointed toward one principal objective:

EXISTENCE of a new fighter, the Fisher P-75, has been revealed, although doubt was expressed in Washington that the ship will be used in combat. No details concerning the new mystery plane

may be published.

APPOINTMENT of Dr. T. P. Wright as Civil Aeronautics Administrator is a refreshing and encouraging sign of the old fashioned American way of doing things. No politician, Wright is one of the most deeply respected men in engineer-ing and research circles and formerly served as Vice President and Director of Engineering for the Curtiss-Wright Corp. A serious student and accomplished designer, Wright was chiefly responsible for development of the long line of Curtiss Hawk pursuit planes and the adaptation of the turbo supercharger to the modern high speed airplane for improved high altitude performance. He is a member of numerous engineering societies and has presented lectures on various aviation subjects to such renowned groups as the Royal Aeronautical Society. Much of the AAF's present world superiority in equipment is due to his outstanding work as Director of the Aircraft Resources Control Office. His new duties will bring a vigor and knowledge to commercial aviation that bodes well for America's future eminence in the air.

THE LARGEST PORTION of Bell P-63 Kingcobra production is going to Russia. HAWKER Typhoon fighters are now mounting two 1,000 lb. bombs under the wings, giving them a fighter-bomber load

far greater than many pre-war "heavy bombers.

NEW MESSERSCHMITT Me-163 jet propelled fighter plane reported last month in Flash News is known as the Schwalbe or Swallow.

ADDITION of machine guns to the nose of the latest North American B-25 Mitchell bomber (see page 23) brings its armament to a total of eighteen .50 cal. machine guns, easily the greatest armament of any warplane ever flown.

ARMY AIR FORCES low-flying fighter and attack-bombers smashing the in-vasion beachheads prior to D-Day used special quick-fused bombs to avoid digging deep craters which might later impede the progress of landing forces.

SOME IDEA of what it takes to maintain a bomber offensive may be gained from figures recently released by the War Department. Since Pearl Harbor the AAF has dropped a total of 677,012 tons of bombs on the enemy. Since January 1, 1944 a total of 472,054 tons were dropped,





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STEVE PATTI COMPANY 823 5. 2d St., Milwaukee 4, Wisconsin and the AAF estimates that more than 700,000 tons of explosives will be required

THE LAFAYETTE ESCADRILLE, famous in World War I, is living again in this war. Composed of French fighter pilots, the group is flying Republic P-47 Thunderbolt fighter planes against the Boche in France and will follow him into Germany. The Thunderbolts carry the famous tricolor of France on their rudders and each pilot carries a leaf from a tree from the soil of France next to his

C. D. HOWE, Minister of Munitions of the Canadian Government, announced the formation of Turbo Research, Ltd., a crown company formed for the design and development of jet propulsion units for aircraft. The new firm will be a permanent organization and will work in close cooperation with a similar government group organized in England.

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ARMY AIR FORCES has an experiarm and a rorects has an experimental project calling for equipping a Curtiss C-46 Commando giant transport with tricycle landing gear. Although this requires considerable redesign of the giant, its long nose and swept-back wing simplifies the task. Tricycle landing seer have proved the medium control of the seer have proved the seer have proved the seer have proved the seer have the seer have proved the seer have the seer hav gears have proved themselves completely and few conventional landing gears are left in production.

GERMAN Focke-Wulf Fw-290 is powered by a B.M.W. 802 engine developing 2,100 horsepower.

MESSERSCHMITT Me 264 is a four motored giant which is claimed to have a range of 6,200 miles. According to a report from a German radio station, one of the type is standing by to fly Hitler to Japan at the last moment. Perhaps more than a 6,200 mile range would be required to take Hitler where he's going!

COMPLETE "aero clubs" are now being flown into France by Douglas C-47 transport planes. The aero clubs consist of easy chairs, ping pong tables, snack bars, writing tables, coffee and doughnut making equipment, pianos and, believe it or not—two Red Cross girls! The clubs an be set up in one hour after landing and we can bet they're a welcome sight to weary GI's.

THE 9th AIR FORCE has formed a new unit, the 19th Tactical Air Command fying Thunderbolt, Mustang and Lightming fighters in low-flying attacks on memy ground installations. Commander of the new unit is Brigadier General Otto P. Weyland. Brig. Gen. Elwood R. Quesada continues as C.O. of the 9th Air Force Tactical Command:

FIVE BOEING B-17 Flying Fortresses that made a forced landing in Sweden have been loaned to the Swedish Government which released them to Swedish Aerotransport Company for conversion into commercial transport planes. Three of the giants have been completed and one is now on regular airline service.

MAJOR FRIEDRICH KARL MULLER was killed in action over Germany. According to the German radio, he had a score of 140 victories over Allied fliers.

THE GIANT DOUGLAS plant in Tulsa. Oklahoma completed the last of the Consolidated B-24 Liberator bombers and is now in quantity production on the new Douglas A-26 Invader, due to appear in action shortly

WESTINGHOUSE Electric & Manufacturing Company is preparing plans for delivery of complete airports to any part of the world after the war. The "package airports" will possibly consist of landing strips, collapsible hangers, tools, equipment and supplies. Wanta buy an airport?

THE BRISTOL Beaufort 1A torpedo planes built in Australia are powered by Pratt & Whitney Twin Wasp R-1830-SC3G engines of 1,200 horsepower each.

SIR ROY FEDDEN "suggests" that the power "expected" of the new Rolls-Royce Griffon engine "might" be 2,400 horse-power, instead of the 1,750 horsepower figures officially released. Sir Roy spoke at the annual Wilbur Wright Lecture of the Royal Aeronautical Society in Lon-

CONSOLIDATED has completed the last Catalina, one of the surprisingly outstanding planes of the war. Production facilities for B-32 bombers and PB2Y Coronado flying boats are thus expanded.

VICTORY

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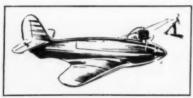
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Pvt. L. B., AAF, Fort Sill, Okla.



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"I am a member of the U.S. Coast Guarde Auxiliary Unit, and find that my past model experience has helped me a lot in identifying different types of plames. Have been building Gereland Models since I was 12 years old, and am just starting on a C-D Whiteart side, and am just starting on a C-D Whiteart with the compare my helphala 23 are so in which to more my helphala 23 are so in which to more my helphala 23 are so in which to more with the U.S. Marines in the South Pacific."

E.W.M., Aux. C.G., Mass.

"Am in the Navy, and thanks to my years of building C-D Models, have excelled in my Recognition class."

M.G.C., USNTC, San Diego, Calif.

"Have been in the RCAF for 2½ years, and in that time have found model building my chief source of recreation, especially on an Isolated southen. It has helped me in my trade, as the intricate and detailed model building lays a firm foundation for the precision requirements of our work in the RCAF—and I give a great deal of credit for my success to your line Kits, and excellent authentic C-D drawings.

"While on duty in the So. Par. with a Sun., I was, in charge of the Paint and Fabric Dept. I took up the repair of plywood allerons and to not surprise it was east, solely because of my past model experience. I was complimented by the Engineering Officer on the work. Incidentally, I have been building C-D's since 135a, and have 6 of them in the Smithsonian Institute, Washington, D.C. L.M.McC., Jr., W.O. USMCAS, Quantico, Va.

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